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An in-depth study was conducted in three selected cities to determine recommendations for improvement of vocational education. Some findings were: (1) Most students entered the world of work without specialized occupational training, (2) Enrollment in vocational programs was higher when students were taught in comprehensive schools, (3) An imbalance existed between high school enrollments in vocational programs and local labor market composition, (4) Vocational education in the smaller cities was altered more closely to the areas of the labor market, (5) The majority of the graduates did not recall being reached by counselors, (6) Vocational graduates had greater employment stability, received more rapid increases in earnings, and received higher averaged monthly earnings, (7) Extra earnings of the vocational graduates justified the cost of their education, and (8) Less than one-half of the male graduates obtained jobs that were directly related to their training. It was recommended that: (1) programs in broad general skills with general applications be developed, (2) programs be aimed at the large proportion of students who see little relevance in either vocational or academic curriculums, (3) vocational education bring meanings and interest to the learning experience (4) opportunity be provided for employment exploration and familiarization as an integral part of the curriculum, and (5) vocational guidance be expanded. (DM)

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OBSERVATIONS AND CONCLUSIONS

BASED ON A STUDY OF THREE SELECTED CITIES IN PENNSYLVANIA

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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This report is based on (1) data and information collected pursuant to a contract with the U. S. Office of Education; (2) additional studies and analyses pursuant to a contract with the Pennsylvania Department of Public Instruction; and (3) other studies and research which the authors have conducted in connection with other projects which, directly and indirectly, are related to the topic under consideration. In undertaking this project the authors have been encouraged to express freely their professional judgment. Points of view, opinions, conclusions, and recommendations stated do not, therefore, necessarily represent the official positions or policies of the U. S. Office of Education or the Pennsylvania Department of Public Instruction.

PREFACE

In the preparation of this report the authors were assisted by Charles C. Drawbaugh of the Department of Vocational-Technical Education, Rutgers-The State University, who prepared the basic material for Chapters 2, 3, 4. In no way, however, is he to be held responsible for any of the interpretations, conclusions, and recommendations which stem from the data and discussions in these and other chapters.

James M. Mead assisted in the analysis of the cost-effectiveness data. Louis Silversin, Frederick Agostino, and David McDonald also assisted in the preparation of material for various parts of the report.

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Needless to say, none of these above-mentioned persons should in any way be held responsible for errors, interpretations, conclusions, or recommendations.

We wish also to express our appreciation to John W. Struck, State Director of Vocational Education, the Department of Public Instruction, who has given us support in the conduct of this project. We know that his and our objectives are the same—better education and training for youth who enter the world of work. Whatever disagreements exist, if any, are concerned with the means by which this objective can be achieved. We hope that this report will contribute to a more fruitful discussion of this question.

One final word: This report is truly the joint product of the two authors. The order of listing is alphabetical and in no way represents any difference in contribution.

Jacob J. Kaufman

Morgan V. Lewis

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1

INTRODUCTION

At present the Commonwealth of Pennsylvania is experiencing extensive growth in occupational education. Two main trends have converged to produce this expansion. The first is the rising national awareness that the majority of our young people are being poorly prepared by our schools to assume a productive place in the labor force. On the average, only about three-fourths of the students in a ninth grade class graduate from high school and only about one-half of these graduates, roughly one-third of the ninth grade enrollment, enter college. Despite this, the main emphasis in high school instruction has been directed to those students who plan to go on to college. The second trend, which has influenced Pennsylvania more specifically, was the long-run economic decline in the State. The high rates of unemployment, the slow growth of population, and the actual drop in population in the 15 to 30 age group prior to 1963, alerted educators and legislators that corrective action was necessary.

This corrective action has mainly taken the form of supporting area vocational-technical schools. Most of these are of the part-time (or "about") type where the student receives specialized shop and laboratory instruction in the area school and other instruction in his "home" school. The curriculum offered in these schools, while based on labor market studies, tends to be similar to the traditional offerings. The usual groupings of trade and industrial, technical, agriculture, etc. are being followed in organizing the programs and courses that are to be offered.

The Federal legislation that has made this expansion possible—the Vocational Education Act of 1963—does not, however, require that programs be organized along traditional lines. The primary aim of this legislation is: "To maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education," and to provide combinations of education and employment that persons of all ages may "have ready access to vocational learning or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training."

The Issues

The directives of Congress are broad. The question arises as to the extent to which vocational education is responding to them. It is to this question that this report is directed. It is concerned with vocational education in general, based on data obtained from three cities in Pennsylvania, and is designed to explore the following questions:

1. To what extent has vocational and technical education penetrated the school enrollment?
2. What adjustments have been made in vocational and technical programs to meet the needs of the students and the changing requirements of employers?
3. What are the strengths and weaknesses in the existing programs: agriculture, distributive education, home economics, office occupations, technical, and trade and industrial?

On the assumption that the vocational education programs need to be expanded, it will be helpful to explore the following additional questions so that the answers can assist the administrators of vocational and technical education in the future development of their programs. The questions are:

4. What is the evaluation of the vocational education graduate of his school experience?
5. What has been the employment experience of the vocational education graduate?
6. Do the extra costs of vocational education produce sufficient extra benefits to justify the continuation of these extra costs?

Gathering the Data

In an attempt to answer these questions reliance was placed on a variety of sources of information, including data from three selected cities in Pennsylvania. One was defined as small, under 100,000 in population; one as medium-sized, between 100,000 and 500,000 in population; and one as large, over 500,000 in population. These cities will remain unidentified in this report. It should be noted that the three cities were not selected randomly. They were selected because they are generally acknowledged among vocational educators to have good vocational programs. The sample, therefore, is not representative of all vocational graduates in Pennsylvania. It can be assumed, however, that the measures of the employment experiences of the graduates in this sample reflect the upper range of the advantages to be obtained from vocational preparation as it has been conducted in the past. The similarity of the results in the present study to other more general studies[1] suggests that though the conclusions drawn from these data may not reflect specific situations in particular communities they do have considerable applicability to vocational education in general.

Information designed to answer the questions listed above was obtained from four major sources:

1. Reports of a visiting team of experts representing the various programs in vocational education.[2]
2. Census data which provide background data on the economic and social characteristics of each city.
3. Personal interviews with 1,780 graduates from the academic (college preparatory), vocational, and general curricula which provided the information on the students' employment experiences and their evaluations of their training.
4. The evaluation of the graduates' performance on the job by their supervisors.

The interviews of the graduates were obtained in the small and medium-sized cities from lists provided by their high school. In each of these two cities 583 interviews were conducted. In the large city some interviews were obtained in following-up names provided by their high schools but most were obtained through the cooperation of their employers. A total of 614 interviews was conducted in the large city. In all three cities the interviews, conducted in the summer of 1965, were limited to graduates of the public schools from the years 1960 to 1964. The respondents, thus, had from one to five years of employment experience.

It was originally intended that the interviews would include 50 per cent vocational graduates, 25 per cent academic graduates, and 25 per cent general curriculum graduates. It proved difficult to distinguish between general and vocational preparation in office occupations. To hold to a strict definition of vocational preparation, a criterion of whether or not the respondent had studied shorthand was established.

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[1] Kaufman, J. J. *et al.*, *The Role of The Secondary School in The Preparation of Youth for Employment.* Institute for Research on Human Resources, The Pennsylvania State University, 1967.

Eninger, M. U., *The Process and Product of T & I High School Level Vocational Education in the United States: The Product.* Pittsburgh, Pa.: American Institutes for Research, 1965.

[2] The original visits were made in the spring of 1965. In the spring of 1967 the three Pennsylvania school systems were again contacted to determine what adjustments had been made in curriculum offerings since the previous visits.

Those respondents who had studied shorthand were considered vocationally prepared. This definition tended to overweight the general curriculum. The final percentages were vocational graduates 42 per cent, general curriculum graduates 41 per cent, and academic graduates 17 per cent. The proportion of males and females was almost equal.

The general curriculum should not be confused with general education. Presumably, general education is a component of all of the curricula. It includes courses in English, history, and social studies, and usually science and mathematics. Occasionally the last two are taught as related vocational courses but more often they are included as part of general education. The general curriculum, however, is a track for those students who do not plan to go on to college and who do not have specific vocational plans, or for those whose plans do not match the vocational offerings, or for those who cannot gain acceptance into the vocational curriculum. Thus, the general curriculum is followed by those students who simply do not "fit" the other curricula. Most students select it not because it provides options that fit their needs but because either they cannot meet the requirement of the other curricula or they are unsure of their own career plans.

The Issues and the Results

Each of the six questions about the success of vocational education is addressed specifically in this report.

In Chapter 2 the degree to which vocational education has penetrated the school enrollment in three Pennsylvania cities is discussed. At first glance the penetration appears to be rather substantial—30 per cent. Most of these students, however, were enrolled in office occupations programs. These programs were not reimbursable until the Vocational Education Act of 1963. When office occupations are excluded, the total enrollment in all other vocational programs falls to seven per cent in the three selected cities.

The office occupations programs were the only ones to show congruence between enrollments and employment patterns in the labor markets of the three communities. The other programs, primarily because of their low enrollments, failed to reflect the occupational patterns of the labor markets. The high demand for office workers does not necessarily explain the success of the office occupations programs. There also was a high demand for students trained in distributive education but the enrollments in these programs were very small. Some reasons for these disparities are discussed in Chapter 3.

In Chapter 4 the reports are summarized of the evaluation team that visited the schools in the three communities and rated their vocational programs. These ratings were generally better than average. As seen by the experts, what these vocational programs were doing, they were generally doing well.

The interview responses of the graduates in the three cities were not as favorable as the reports of the experts. The results of the interviews are reported in Chapters 5, 6, and 7. Each chapter is concerned with a different segment of the respondents' experiences. Chapter 5 covers their experiences in school. Chapter 6 concentrates on the guidance and counseling received by the graduates. And Chapter 7 is concerned with their employment experiences.

The data covered in Chapter 5 point to some disturbing relationships in the school experiences of the graduates. Curriculum choice was found to be largely determined by family circumstances and IQ, and not as the result of individual interests. Another disturbing finding was that about one-third of the vocational males who attended comprehensive schools felt "looked-down on" because of the courses they took. A third finding was the cultural limitations on the vocational plans of girls and the acceptance of these limitations by girls. All of these issues are discussed at greater length in Chapter 5.

Most of the graduates who recalled receiving guidance and counseling reported favorably on their experiences. However, about one-half of the vocational graduates reported that they never discussed their course choices with a counselor, and over three-fourths reported that they never discussed their job plans. The figures for academic and general curriculum graduates were not quite so low. Obviously, if guidance is to carry out the function for which it is designed, much greater emphasis is needed. The direction that this expansion should take is discussed in Chapter 6.

The actual employment experiences of the graduates are described in Chapter 7. The measures discussed in this chapter tend to reflect more favorably on vocational education than those presented in Chapters 5 and 6. Vocational graduates are shown to have experienced at least as good, and in most cases better, occupational experiences than graduates of the other curricula. A section in this chapter suggests that the extra earnings of the vocational graduates justify the extra costs of their education.

A New Direction for Vocational Education

Most of the data thus suggest that vocational education is a "success." The experiences of its graduates are generally favorable. There is enough contrary evidence, however, to argue against the *expansion* of vocational education along traditional lines. The reasons for taking this position are presented in Chapter 8. This discussion should not be interpreted to mean that vocational education, in its traditional form, should be abandoned. Rather, it suggests that new, innovative programs should be considered and that additional funds should be directed towards those students who are not interested in or cannot meet the requirements of vocational education as it is usually conducted.

Essentially it is argued in Chapter 8 that vocational education has a key or the means to make education relevant to the large percentage of students who presently drift through the typical general curriculum that was described above. To reach these students, however, vocational education must broaden both its approach and its goals. The emphasis for these students should no longer be on specific training for a delimited number of occupations. Instead the appealing features in the basic nature of vocational education should be used to bring relevance to the learning experiences of those students who are bored and frustrated by the abstract and verbal emphasis that dominates most non-vocational secondary education. In other words, vocational education should be the vehicle for bringing general education, in its best sense, as well as occupational preparation, to those students who presently can find nothing of personal relevance in their school experiences.

This recommendation should not be interpreted solely as a call to bring the "disadvantaged" student into vocational education. There is a need for this, of course, and it appears that vocational education can serve these students as well. But the students to whom school is not relevant are not only the disadvantaged.

The vast majority of the students in the general curriculum, especially those who graduate from this curriculum, are not disadvantaged. They come from stable homes where the necessities of life have been provided. Such young people are not alienated from society. In most cases they are eager to assume productive roles in it. While in high school, however, they are not ready to make the initial career decision which a curriculum choice represents. They realize that they are not going on to college, but they lack sufficient vocational maturity and information to decide to prepare for non-college occupations. As a result, their curriculum decisions are made by default. They end up in the general curriculum because there is none other suitable for them.

Because the educator does not know what to do with the general curriculum, he gives its students a hodgepodge of low level academic and vocational courses. These courses are largely useless to the students and the students realize this. The frequent complaint "How am

I ever going to use this subject?" is all too valid for the general curriculum student.

Vocational education has a means of making the school experience relevant. The data in the following chapters document the need and suggest the potential. Much work must be done if this potential is to be achieved. New types of programs must be designed and tested. Old styles of administration will have to be replaced. New teachers and administrators will have to be trained and old ones retrained. But these are operational problems that can be overcome. They must be overcome if ways are to be found to make education meaningful for those students who presently waste their high school years.

2

THE PENETRATION OF VOCATIONAL EDUCATION AND OCCUPATIONAL TRAINING IN THREE CITY PUBLIC SECONDARY SCHOOLS IN PENNSYLVANIA

This chapter is directed to the question: "To what extent has vocational and technical education and non-vocational occupational training penetrated public and secondary education in Pennsylvania cities?" The answer is based on data from three cities in Pennsylvania.

Vocational enrollments for high school boys and girls were compared to total enrollments in the schools of a small, medium-sized, and large city. In addition, enrollments for vocational programs in each service area were studied for these schools, both combined and separately. And, finally, non-vocational occupational education enrollments were examined for each of the vocational service areas for each of the city school systems.

A major problem in reviewing vocational study enrollments was to determine which figures were strictly vocational as distinguished from occupational in orientation. Vocational education, restricted by laws and regulations, represented a part of the total occupational education program found in the city secondary schools. For purposes of this study, vocational education was defined as including those programs which were reimbursed by the Department of Public Instruction, and office occupations education. The new educational service known as office occupations education was not fully adopted into the vocational education family at the time that some of the data were collected, but its clear vocational nature made its inclusion necessary.

The Overall Penetration Data

Table 1 shows that during the 1964-65 school year approximately 20,000 students, or 30 per cent of all students enrolled in the public high schools of the three cities, were taking a vocational program as defined above. An additional 18,492, or 26 per cent, were enrolled in some form of non-vocational occupational training, as can be seen in Table 2. Thus, it would appear that a substantial number of students were obtaining some form of vocational or occupational training in the three schools.

However, the penetration of vocational education or occupational training is not as great as it seems when the data are examined in terms of the individual cities, the specific programs, and the sex of the students. Furthermore, the enrollment data for non-vocational occupational training include a significant amount of duplication because the students may have enrolled in more than one program by taking selective courses.

Table 1. A Comparison of Vocational and Total High School Enrollments in Grades Ten to Twelve in Three Cities During the 1964-65 School Year

	High School Enrollment		Per Cent
	Vocational	Total	Vocational
Total, three cities	19,557	64,566	30.3
Male	5,994	33,311	18.0
Female	13,563	31,255	43.4

Table 2. A Comparison of Non-Vocational Occupational and Total High School Enrollment in Three Cities During the 1964-65 School Year

	High School Enrollment		Per Cent
	Occupational	Total	Occupational
Total, three cities	17,034	64,566	26.4
Male	4,533	33,311	13.6
Female	12,501	31,255	40.0

What are the significant conclusions to be drawn from the enrollment data set forth in Tables 1 and 2?

First, it is quite apparent that the data presented are dominated by the large city enrollments. The percentages of enrollments in vocational education in the small and medium-sized cities were 41 and 50 per cent, respectively. (See Tables 5, 8, and 11.)

Second, the 30 per cent penetration rate in vocational education reflects a relatively heavy enrollment of females. For example, in the three cities the male enrollment was 18 per cent while the female enrollment was 43 per cent.

Third, enrollment in vocational education in the three cities was dominated by the heavy female participation in office occupations, as can be seen from Table 3. If this group is excluded, the percentage rate of enrollment in vocational education falls from 30 per cent to 11 per cent. This computation is not designed to minimize the importance of office occupations training for females but rather to point up the

Table 3. Male and Female Enrollments in Vocational Programs in Three Pennsylvania City Public School Systems During the 1964-65 School Year

Vocational Education Program	Enrollments					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	228	3.80	315	2.32	543	2.78
Home economics	2	.04	241	1.78	243	1.24
Office occupations	2,342	39.07	12,390	91.35	14,732	75.33
Technical	224	3.74	28	.21	252	1.29
Trade and industrial	3,198	53.35	589	4.34	3,787	19.36
Student Total	5,994	100.00	13,563	100.00	19,557	100.00

Table 4. Non-Vocational Occupational Enrollments for Grades Ten to Twelve in Three Pennsylvania Cities by Sex for the Six Service Areas

	Enrollments			
Service Area	Male	Female	Total	%
General agriculture	231	58	289	1.56
Distributive education	0	0	0	0.00
General home economics	170	8,802	8,972	48.52
Office practice**	1,166	5,037	6,203	33.54
Technical education	0	0	0	—
Trade and industrial*	2,966	62	3,028	16.38
Grand Total	4,533	13,959	18,492	100.00

* Includes trade preparatory, trade exploratory, and industrial arts enrollments.

** The non-vocational enrollments above included (1) those students who were developing competency in personal-use skills and (2) those students who were receiving basic and background instruction for continued education.

Note: It was estimated by the school personnel in each of the three school systems that 35, 100, and 72 per cent of the office occupations education was vocational in the small, medium-sized, and large cities. Vocational was defined as specialized instruction for students to become wage earners in offices.

relationship between the degree of penetration of vocational education and the industrial structure of the community.

Fourth, although it appears that non-vocational occupational training involved about 26 per cent of the students in the three cities, a heavy concentration is found in female enrollment in general home economics and office practices, as can be seen from Table 4. If these categories are excluded, the percentage falls from 26 per cent to 7 per cent. Again, it is not intended to minimize the importance of these two programs, but it is important to recognize that they do not necessarily represent significant training for the world of work.

In general, it can be concluded that during the school year 1964-65 neither vocational education nor some form of occupational training had significantly penetrated the students enrolled in the secondary school systems in the three cities studied. It is true that since that year, Pennsylvania has made significant advances by supporting, as indicated earlier, the construction of new area vocational schools and other vocational programs. It is also true, however, that the Commonwealth of Pennsylvania may still have a longer way to go.

Penetration by Size of City

In Tables 5 to 14 there are presented data on enrollments in both the vocational and occupational curricula by sex and program, according to the size of the city.

The first impression of the penetration of the student body in the small city would be that its school system was making substantial efforts in vocational and occupational education and training, since approximately 40 per cent of its students were enrolled in the traditional vocational education curriculum. If one were to exclude the enrollment of females in home economics and office occupations, the percentage falls to 24 per cent. This is still a high percentage when compared with the larger cities. The explanation for this relatively high penetration might be that vocational education in the smaller city was housed in a comprehensive high school in contrast to the larger city which usually had a separate vocational school. Thus, potential students might have a greater awareness of the vocational curriculum, a greater opportunity to take a vocational program without changing schools, and a greater exposure to vocational teachers who can acquaint the students with the vocational curriculum.

It is fairly obvious from Table 5 that there was an unusual amount of duplication in the enrollments in the occupational programs in the small city. What is unknown is the degree of duplication. What is significant is that, apparently, a large proportion of the students were carrying on occupational explorations in this city, as revealed in Table 7.

Table 5. Enrollments in Vocational and Occupational Programs in a Small Pennsylvania City Public School System During the 1964-65 School Year

	High School Enrollments			Per Cent	
	Vocational	Occupational	Total	Vocational	Occupational
Total	1,287	1,786	3,152	40.8	56.7
Male	710	545	1,617	43.9	33.7
Female	577	1,241	1,535	37.6	80.9

Why was this exploration taking place? It could be hypothesized that some of these students found the academic curriculum unsatisfactory and the vocational curriculum too difficult. Others might have avoided the vocational curriculum, because of the emphasis in our society on academic training as a basis for college entrance, but still might have sought special occupational training. Still others might have found that the offerings in the small city were too limited. Table 14 shows the enrollments in various trade, industrial, and technical programs and reveals that in the small city there were 12 such courses in contrast to 23 courses in the large city, primarily for boys.

The medium-sized city showed a 50 per cent enrollment in vocational education and a 10 per cent enrollment in occupational training, the latter concentrated among the females in home economics. (Tables 8-10) In Table 9 the data show a heavy enrollment of females in office occupations. If this category is removed, it is found that the penetration rate for vocational education drops from 50 per cent to 26 per cent.

The occupational enrollment in the medium-sized city consisted of girls enrolled in general home economics. Here little exploratory education was found among the students in the high school, reflecting limited options.

As far as course offerings are concerned, Table 14 reveals a somewhat larger number of offerings in the medium-sized city as compared with the small city: 14 as against 12.

The data for the large city revealed that about 28 per cent of the students were enrolled in vocational education. Of the 16,349 enrolled, 11,085 represented female enrollments in office occupations. Thus, the elimination of this category reduced the percentage enrollment from 28 per cent to slightly less than six per cent.

Again, a large proportion of the enrollment of girls in the occupational programs were involved in general home economics. In addition, a substantial portion of the males were enrolled in a recently developed trade preparatory program. This can be briefly described as an organized curriculum which attempted to meet the needs of boys who did not have the aptitude or desire (either innate or because of early environmental factors) to participate in the strictly vocational education curriculum.

This trade preparatory curriculum offers the student an opportunity for vocational exploration as well as training in mechanical skills. Graduates from this curriculum are prepared to enter a variety of skilled trades including cabinet making; electrical, foundry or mechanical work; machine operation; painting; tool and die making; and welding. The student has an opportunity to explore briefly the shop areas in the 10th grade and then to choose more specific shop training during the 11th and 12th grades. An analysis of the results of this program is presented below, but it is sufficient to state at this point that, in general, the trade preparatory program may have been a desirable substitute for the general curriculum.

The Trade Preparatory Curriculum

As mentioned previously, the large city carried on a trade preparatory program, which was briefly described above. A study of this program, based primarily on interviews with 108 male graduates, resulted in four main findings:

1. The personal and family characteristics of these graduates were similar to those of the graduates of the vocational curriculum.

2. The trade preparatory graduates felt just as accepted and as well treated by their classmates and their school as the graduates of the vocational and academic curricula.

3. The trade preparatory graduates rated their preparation for their first jobs less favorably than the vocational graduates, but more favorably than the academic graduates.

4. Compared to the vocational graduates, the trade preparatory graduates were less likely to be placed in their first jobs by their schools.

Negroes, in the large city, represented a larger proportion of the students interviewed in the trade preparatory curriculum as compared with the other curricula.

On balance, it can be asserted that an effort was made by the large city school system to develop a curriculum to meet the recognized needs of a special group of students, whose needs were not being met by the other curricula. The fundamental question still remains as to whether the program was innovative enough to meet their needs.

Table 6. Male and Female Enrollments for Vocational Programs in a Small Pennsylvania City Public School System During the 1964-65 School Year

Vocational Education Program	Enrollments					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	10	1.41	14	2.43	24	1.86
Home economics	2	.28	148	25.65	150	11.66
Office occupations[a]	110	15.49	390	67.59	500	38.85
Technical	142	20.00	25	4.33	167	12.98
Trade and industrial	446	62.82	0	—	446	34.65
Student Total	710	100.00	577	100.00	1,287	100.00

[a] The vocational program was set up to graduate 150 students each year.

Table 7. Male and Female Enrollments in Non-Vocational Occupational Programs in a Small Pennsylvania City Public School System During the 1964-65 School Year

Occupational Program	Enrollments					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	0	—	0	—	0	—
Home economics	40	7.3	503	40.5	543	30.4
Office occupations	205	37.6	726	58.5	931	52.1
Technical	0	—	0	—	0	—
Trade and industrial[a]	300	55.1	12	1.0	312	17.5
Student Total	545	100.0	1,241	100.0	1,786	100.0

[a] Includes industrial arts.

Table 8. Enrollments in Vocational and Occupational Programs in a Medium-Sized City Public School System During the 1964-65 School Year

	High School Enrollments			Per Cent	
	Vocational	Occupational	Total	Vocational	Occupational
Total	1,921	394	3,819	50.3	10.3
Male	981	0	2,009	48.8	—
Female	940	394	1,810	51.9	21.8

Table 9. Male and Female Enrollments for Vocational Programs in a Medium-Sized Pennsylvania City Public School System During the 1964-65 School Year

Vocational Education Program	Enrollments					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	6	.61	22	2.34	28	1.46
Home economics	0	—	0	—	0	—
Office occupations	276	28.13	915	97.34	1,191	62.00
Technical	82	8.36	3	0.32	85	4.42
Trade and industrial	617	62.90	0	—	617	32.12
Student Total	981	100.00	940	100.00	1,921	100.00

Table 10. Male and Female Enrollments in Non-Vocational Occupational Programs in a Medium-Sized Pennsylvania City Public School System During the 1964-65 School Year

Occupational Program	Enrollments					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	0	—	0	—	0	—
Home economics	0	—	394	100.0	394	100.0
Office occupations	0	—	0	—	0	—
Technical	0	—	0	—	0	—
Trade and industrial*	0	—	0	—	0	—
Student Total	0	—	394	100.0	394	100.0

* Includes industrial arts.

Table 11. Enrollments in Vocational and Occupational Programs in a Large Pennsylvania City Public School System During the 1964-65 School Year

	High School Enrollments			Per Cent	
	Vocational	Occupational	Total	Vocational	Occupational
Total	16,349	14,854	57,595	28.4	25.8
Male	4,303	3,988	29,685	14.5	13.4
Female	12,046	10,866	27,910	43.2	38.3

Table 12. Male and Female Enrollments for Vocational Programs in a Large Pennsylvania City Public School System During the 1964-65 School Year

Vocational Education	Enrollments					
	Male		Female		Total	
Program	No.	%	No.	%	No.	%
Agriculture	0	—	0	—	0	—
Distributive education	212	4.92	279	2.32	491	3.00
Home economics	0	—	93	0.77	93	0.57
Office occupation*	1,956	45.46	11,085	92.02	13,041	79.77
Technical	265	6.16	13	0.11	278	1.70
Trade and industrial	1,870	43.46	576	4.78	2,646	14.96
Student Total	4,303	100.00	12,046	100.00	16,349	100.00

* In office occupation education 72 per cent of total enrollment was reported in the vocational program.

Table 13. Male and Female Enrollments in Non-Vocational Occupational Programs in a Large Pennsylvania City School System During the 1964-65 School Year

	Enrollments					
Occupational	Male		Female		Total	
Program	No.	%	No.	%	No.	%
Agriculture	231	5.8	58	0.5	289	1.9
Distributive education	0	—	0	—	0	—
Home economics	130	3.2	6,447	59.3	6,577	44.4
Office occupations	961	24.1	4,311	39.7	5,272	35.5
Technical	0	—	0	—	0	—
Trade and industrial	2,666	66.9	50	0.5	2,716	18.2
Student Total	3,988	100.00	10,866	100.00	14,854	100.00

Table 14. Enrollments in Trade and Industrial and Technical Education Programs by Courses for Boys and Girls in a Large City, a Medium-Sized City and a Small City during the 1964-65 School Year

Course of Study	Enrollment						
	Large City		Medium City		Small City		
	Boys	Girls	Boys	Girls	Boys	Girls	Total
Automobile maintenance	445	—	133	—	82	—	660
Baking	30	—	—	—	—	—	30
Brick masonry	—	—	30	—	43	—	73
Cabinetmaking	91	—	31	—	70	—	192
Carpentry	116	—	49	—	—	—	165
Chemical technician*	28	13	6	3	—	—	50
Child care training	—	31	—	—	—	—	31
Commercial art	115	52	—	—	—	—	167
Computer programming technology*	—	—	—	—	26	24	50
Cosmetology	5	232	—	—	—	—	237
Dental assistant	—	6	—	—	—	—	6
Drafting, architectural*	—	—	29	—	—	—	29
Drafting, mechanical*	137	—	55	—	51	1	244
Drapery sewing	—	33	—	—	—	—	33
Dress making	—	110	—	—	—	—	110
Electrician, general	431	—	47	—	51	—	529
Electronics technology*	—	—	76	—	65	—	141

Table 14: Continued

Course of Study	Enrollment						
	Large City		Medium City		Small City		
	Boys	Girls	Boys	Girls	Boys	Girls	Total
Foundry practice	19	—	—	—	—	—	19
Machine shop	154	—	57	—	64	—	275
Optical mechanics	19	7	—	—	—	—	26
Pattern making	7	—	—	—	—	—	7
Plumbing-heating-cooling	54	—	33	—	33	—	120
Power machine operator	—	3	—	—	—	—	3
Practical nurse	—	42	—	—	—	—	42
Printing	147	—	65	—	33	—	245
Radio-television	46	—	38	—	—	—	84
Refrigerator-oil heat	32	—	—	—	—	—	32
Restaurant practices	41	60	—	—	—	—	101
Sheet metal	59	—	—	—	40	—	99
Tailoring	76	—	—	—	—	—	76
Textiles	2	—	—	—	—	—	2
Upholstery	21	—	—	—	—	—	21
Welding	60	—	50	—	30	—	140
Totals	2,135	589	699	3	588	25	4,039

* Indicates technical education programs

Summary and Conclusions

The small city school system reported that 20 to 30 per cent of its college preparatory students and 10 to 15 per cent of the vocational-technical students entered college. The medium-sized city school system reported that 29 per cent of its students went on to degree-granting institutions while 44 per cent pursued some type of post-high school educational activity. The large city school system reported that 22 per cent attended college, 8 per cent entered other kinds of educational institutions, and 49 per cent found employment in the world of work. The proportion of students who completed college, although a difficult figure to obtain, is usually about one-half.

It is quite evident from these figures that a vast majority of the students in the three cities did not go on to higher education and entered the world of work without any specialized occupational training. This was particularly true of the boys in the schools, only 18 per cent of whom were enrolled in vocational programs. The higher percentage of enrollment in vocational education (frequently cited) in general reflects a heavy enrollment of females in home economics and office occupations.

It has also been shown that large proportions of the students were enrolled in non-vocational occupational programs, reflecting either some occupational exploration or simply dissatisfaction with the academic offerings. This group, probably large in number, eventually enter the labor force without any organized occupational training because the school systems generally do not have a well-conceived curriculum to meet their needs.

Although each vocational service had programs which were non-vocational, such as home economics, educators from most of the other vocational services were reluctant to recognize the importance of related courses and programs. General, exploratory, and preparatory education is vital to the continuum in occupational and general education.

The small and medium-sized cities had a higher percentage of vocational students in the high school population than did the large city. Vocational education in the small and medium-sized cities was housed in the comprehensive high school while in the large city, it was often taught in separate vocational schools.

Students in the comprehensive high schools in the three cities knew about vocational education before they could take it, by virtue of the fact that they lived in the vocational environment. Vocational educators in vocational schools had the additional task of acquainting students in general schools with vocational programs and enticing them to change schools. This may have accounted in part for the differences in degree of penetration of vocational education between large and small city school systems. How the students felt they were treated in the comprehensive and the separate vocational school is discussed in Chapter 5.

The large city schools offered more vocational programs than the small and medium-sized city schools presumably because of a larger student population. Thus, in the large city more options were available. (See Table 14.) It is possible that where fewer vocational offerings were available, some students were forced into programs.

Both boys and girls enrolled for training in vocational education. Total enrollment figures for the two sexes differed greatly. Likewise, services within vocational education showed enrollments with marked differences relative to sex. Boys tended to enroll in agriculture, technical, and trade and industrial education. Girls tended to enroll in home economics and office occupations education. The enrollment of male and female students in distributive education was somewhat balanced. Without trade and industrial education for the boys and office occupations education for the girls in city schools, vocational education would have had insignificant enrollments.

Technical education, by definition, does not appear to fit well into the secondary vocational program, if the limited number of offerings and small enrollment can be taken as indices. Difficulty of subject matter, immaturity of students, extended training time needed, and employment problems of graduates may be factors which limit technical education at the secondary level.

3

VOCATIONAL EDUCATION AND OCCUPATIONAL OPPORTUNITIES

Chapter 2, in general, revealed that in three Pennsylvania cities vocational education, with the exception of office occupations, had not significantly penetrated the school population during the school year 1964-65, despite the fact that there was evidence of the interest of students in some occupational exploration and despite the fact that a large majority of them would find themselves in the labor force, rather than in some form of higher education.

Another question which arose in this study of vocational education is the extent to which the vocational programs reflected the changing employment patterns of the three cities under study and the extent to which educators made appropriate adjustments. If little, or no relationship existed between the vocational programs and employment patterns, suggestions on the adjustments in the programs are in order.

This is not to say that local labor market needs should be the sole criterion of the type of offerings of a vocational curriculum. The nature of the jobs for which workers are needed—the pay and working conditions of these jobs—must be taken into consideration. And consideration should also be given to the interests of the students, recognizing that the goal of vocational education is not necessarily the learning of a skill, but may be the development of certain attitudes towards work and the work environment.

This chapter is concerned mainly with the degree of relationship between the program offerings and the needs of the community. Each of the three cities is discussed separately. The issue of the interests of the students is discussed in Chapter 5.

I: SMALL PENNSYLVANIA CITY

Vocational Education Program

Forty per cent of the high school population was enrolled in vocational education in the small city in Pennsylvania. Slightly less than half were females enrolled in home economics and office occupations. Agriculture was not included in the vocational education program while distributive education was a token program, accounting for less than two per cent of the vocational enrollment. Health occupations education was partly administered by trade and industrial education and partly by the home economics program. Enrollment in technical education courses accounted for 167 students, or less than eight per cent of the enrollment in vocational-technical education.

Almost 48 per cent of the vocational enrollment was in nine courses in trade and industrial and technical education. Boys made up 100 per cent of the enrollment in trade and industrial education.

Home economics accounted for almost 12 per cent of the vocational enrollment in the small city high school. For reporting purposes, only girls were enrolled in the course.

Employment Patterns

Job concentration in the small city area was high with only a few occupations accounting for the largest proportion of employment for both males and females. Although men were employed in approximately 380 occupations, eight per cent of these accounted for the employment of over 25 per cent of the males in the labor force. The five major job classifications, according to the 1960 census, were for clerks and salesmen, mechanics and repairmen, truck and tractor drivers, railroad laborers, and machinists, in that order. In 1960 about 27 per cent of the men in the small city area were employed as craftsmen or foremen, 24 per cent as operatives, and 14 per cent as clerks or salesmen.

The major job classifications which showed increases in employment during the decade 1950 to 1960 were professional and technical occupations, clerical and sales, operatives, and service occupations. The five classifications which showed declines in employment during the same period of time were managers and officials, laborers, farmers and farm managers, and farm laborers and farm foremen.

For women's occupations the job concentration in the small city area was also high. Over 34 per cent of the women in the labor force were employed in less than four per cent of the 192 occupations which employed females. The greatest number of women were employed as retail sales clerks, followed by secretaries, teachers, sewers and stitchers, and waitresses, in that order. In 1960 one-third of the women in the small city area work force were employed as salesladies or clerks, 23 per cent were operators, 21 per cent were in the service occupations, and 13 per cent were professional.

In the small city area, 5.5 per cent of the civilian labor force was listed as unemployed in 1960. This included 5.7 per cent of the men and 5.2 per cent of the women. The figures indicate that the unemployment rate in the small city area was somewhat higher than the national average of approximately 5 per cent.

During the past decade there was a shift in employment from railroad jobs to jobs in manufacturing, transportation, and public utilities. Sixty-nine per cent of the employment in manufacturing industries, and about 18 per cent of total employment, was associated with lumber and wood products, transportation equipment, and furniture and fixtures. Transportation and public utilities accounted for over 30 per cent of the employment in non-manufacturing industries and almost one-fifth of total employment.

Adjustments in Vocational Education to Meet the Changes in the Employment Patterns

For some occupations the vocational education program in the small city was attuned to the needs of the community while for others it was not. The generalizations which follow were based on data gathered from the schools and information obtained from the census.

A total of 1,287 vocational students were enrolled in the three-year educational program to prepare for jobs in a labor market with a work force of 48,900 persons. Vocational enrollment was about 40 per cent of the total high school enrollment. From the standpoint of enrollment figures, the educational system was making an effort to supply the labor market with skilled workers. The basic question is whether the training was related to the demand.

The vocational school did not provide for skills training in agriculture. Farmers and farm workers made up only 1.8 per cent of the work force, and employment was declining in the farming occupations. Agriculture, however, is more than production farming. Courses in land beautification, conservation, and recreation or agri-business farming might be considered as additions to the vocational program.

Distributive education in the school system was but a token program with an enrollment of 24 students despite the fact that clerks and salespersons made up a large segment of the labor forces in the small city area. This job classification had shown an increase in the proportion of employment from 17.5 per cent in 1950 to 19.7 per cent in 1960. Distributive education did not appear to be meeting the needs of the community in terms of quantity of clerks and salespersons it graduated. It would appear that a shift in enrollment from office occupations education to distributive education would better align graduates with jobs. The shift, implemented by guidance personnel, appears necessary to match better the workers with their jobs. However, wages, working conditions and the negative stereotypes of these occupations may be obstacles to such a shift.

Recent inquiries revealed a broadened program in distributive education in the small city which included handling, packaging, transportation, and sales of commodities. The broadened program was expected to attract more students to distributive education classes.

Home economics education attracted almost 12 per cent of the vocational students and these were girls. The program was geared to preparing girls for homemaking and pre-nursing training. The program had not been updated to train girls for related occupations. A considerable number of women in the small city area were employed as sewers and stitchers, and as waitresses. It is suggested that the pre-nursing students be provided with a program in health occupations as a part of the vocational program. While it should continue to train for homemaking, the program might well be expanded to include courses in sewing and in food handling. The expanded program would attract more students who would meet the demands of the labor market.

Courses of a pre-employment nature have recently been added to vocational home economics education in the small city. A three-year pilot program was established with courses in supervised food services, decorating services, and homemaking aids for boys and girls with varying levels of ability. The objectives of the pilot program were: (1) to expand the vocational home economics program to meet the needs of a larger group of students, (2) to develop a three-year curriculum which will train both boys and girls for wage-earning occupations, (3) to determine the length of time needed for an adequate training program in wage-earning occupations, and (4) to test the value of providing training in more than one occupational skill.

A course in power sewing for girls was added to the trade and industrial program to meet the need which was revealed in the employment data.

Office occupations education attracted 500 students, or about 39 per cent of the total vocational enrollment in the small city. The program had kept up-to-date with some re-direction toward data processing. Both boys and girls were pursuing this course which dominated the total vocational program. The need for shipping clerks, secretaries, typists and office machine operators was great for both male and female. It appeared that office occupations education was meeting the needs of industry in the small city. At the same time it is suggested that many of the students would have profited by receiving training in distributive education. Office occupations education needs to share some of its students with distributive education.

Health occupations education did not appear as such in the total vocational education program in the small city. Girls in home economics were pursuing an option which was in the nature of a pre-nursing course. Recent trends in federal legislation would prod one to recommend a program in health occupations education.

The technical education program was limited to three areas: computer programming technology, electronics, and mechanical drafting. One of the major job classifications which showed increases in employment during the decade 1950 to 1960 was professional and technical occupations. In light of the needs of the community, technical education appeared to be doing an adequate job of training.

Since the 1964-65 school year, the courses of study in technical education were improved and new equipment was added. A coordinator was employed to help improve instruction and to give better student guidance.

Trade and industrial education was providing a well-balanced but limited number of courses. The automobile maintenance program was supporting the transportation industry. Truck and tractor drivers were not being trained. Emphasis in the trade and industrial program might shift in the direction of transportation occupations.

The four building trades courses were probably graduating more students than were needed in the various trades. This was recognized by the educators who asserted that they were training for jobs elsewhere. Given limited resources, it would seem that the building trades courses should be maintained with restricted enrollments and students encouraged to enroll in service occupation courses.

The courses in cabinet making, machine shop, printing, and welding were serving a need in the community and should continue in the vocational education program.

Of late, courses in automobile body repair, home appliance repairs, and power sewing for girls were added to the trade and industrial program. The vocational program of the small city school system has become a part of the area vocational-technical school. A $5 million building was being planned to house a 38-shop program in trade and industrial, and technical education.

II: A MEDIUM-SIZED PENNSYLVANIA CITY

Vocational Education Program

Fifty per cent of the high school population was enrolled in vocational education in the medium-sized Pennsylvania city, although here too was found a heavy concentration in enrollment in office occupations for girls. Agriculture and home economics were not a part of the vocational education program. However, 394 general home economics students were enrolled in grades ten through twelve. Distributive education had a token program with less than two per cent of the vocational enrollment. Technical education enrolled 85 students, or less than five per cent of the vocational enrollment. Office occupations education attracted 62 per cent of the vocational students while trade and industrial education accounted for 32 per cent. In essence, 94 per cent of the vocational students in the medium-sized city were enrolled in two vocational education service areas, office occupation education and trade and industrial education.

Girls were enrolled, for the most part, in office occupations and distributive education programs. Boys were enrolled in trade and industrial and technical education programs.

Health occupations education was overlooked completely in the vocational curriculum in the medium-sized Pennsylvania city.

Employment Patterns

The greatest number of men in the medium-sized city labor area was employed in clerical jobs, followed by retail salesmen, truck drivers and deliverymen, laborers in the metal industries, foremen in durable manufacturing industries, and farmers, in that order. In 1960, one out of every four men in the labor force was employed as an operative, 23 per cent as craftsmen or foremen, and about 14 per cent as clerks or salesmen. The figures had not changed significantly from those of 1950.

The four major occupations employing women were: retail sales, operatives in apparel and textile products, secretaries, and waitresses and counter workers in that order. Thirty-seven per cent of the women in 1960 were employed as operatives compared to 45 per cent in 1950. Thirty per cent were employed as clerks and salesladies in 1960 whereas only 26 per cent were engaged in these occupations in 1950. Fifteen per cent were employed as service workers in 1960, an increase of three per cent since 1950. Employment opportunities for women were increasing in the medium-sized city labor area for clerks and salesladies, and service workers. The number of jobs for women operatives was becoming more limited.

Broadly speaking, job classifications which have shown a percentage increase in employment in the decade 1950 to 1960 in the medium-sized city were professional or technical occupations, clerical or sales, and service work.

The trend in the area was for the manufacturing industries to account for less of the labor force and for the non-manufacturing industries to provide more jobs for workers. Electrical and non-electrical machinery provided more jobs from 1962 to 1963 while the stone, clay, and glass products industries showed a loss of jobs. Primary metals and fabricated metals showed a decrease of jobs during the same period. The textile products industry showed a loss of jobs while there was an increase in jobs in the apparel and related products, and food products industries.

The non-manufacturing industries provided 16,700 more jobs in 1963 than in 1950. The largest gain was in state and local government service which reflected largely an increase in the number of teachers employed in the area. A significant increase in jobs was provided by the service occupations and the retail and wholesale trades.

Adjustments in Vocational Education to Meet the Changes in the Employment Patterns

The vocational education program in the medium-sized city had a better overall interrelationship with the world of work than those of the other two cities studied in Pennsylvania. Not all of vocational education in the medium-sized city was attuned to the needs of the community, however. The generalizations which follow were based on the data gathered from the schools and on information from the census.

Labor was held in high esteem by the people of the community. Men working in the skilled occupations were highly respected. It would follow that vocational education in the community was also respected and supported. It was noted that the high level of labor skill has undoubtedly been responsible for various employers to locate in the area. From another point of view, the established employers were concerned that the supply of skilled and technical workers was somewhat short of their anticipated needs.

The medium-sized city was surrounded by a prosperous agricultural economy, yet it was without a vocational agriculture program. With the relationship of the people to the land, it would appear that vocational educators might explore the interests of youth and the needs of the community relative to this basic industry. While training for production farming is not necessarily encouraged, training for agricultural occupations which include ornamental horticulture, conservation, agricultural business, and environmental science, among others, might be considered. The need for agricultural workers being somewhat insignificant compared to that of other occupational areas, vocational agriculture was excluded.

The program in agriculture for the proposed area vocational-technical school included production agriculture and farm mechanics for boys, and ornamental horticulture for both boys and girls. These courses would be for three years and would accommodate 40 students each, or a total of 120 students.

Distributive education was not training a sufficient number of students to meet adequately the demands of the labor market for salespersons, nor were attempts being made to expand the program. At the same time the number of jobs in sales occupations was increasing in both the retail and wholesale trades in the medium-sized city.

No changes have been reported in the distributive education program from the 1964-65 school year to the present time. The program for the proposed area vocational-technical school will expand the total program by 20 students, both boys and girls, in twelfth grade only. It is questionable if the proposed limited expansion will provide adequately for the needs of the community.

Home economics education in the medium-sized city school system was classified as a "general" rather than a "vocational" program. It was attracting a large female enrollment but was not training students for employment outside the home. The apparent needs of the labor market were for women trained in apparel and textile products skills, and for others trained in waitress and counter work skills relative to home economics.

Whether home economics or trade and industrial education takes the responsibility and does the training in the above skill areas will prove to be an interesting development within the vocational-technical curriculum. Presently, personnel from The Pennsylvania State University are conducting a study which includes in-service training in clothing and textile occupations for general home economists. In addition, courses in trade and industrial education entitled "Fashion Industries" and "Food Preparation and Handling" were proposed for the new area vocational-technical school. The needs for home economics related training courses were identified outside of home economics by The Pennsylvania State University researchers and trade and industrial educators working independently. It would appear, in this case, that home economics was not adjusting to the challenge of providing occupational education at the secondary level, except for homemaking.

Sixty-two per cent of the vocational enrollment was in office occupations education. A total of 1,191 students were enrolled in it, of which 77 per cent were girls.

The greatest number of men in the medium-sized city labor area was employed in clerical jobs. In fact, about 14 per cent of the male labor force was classified as clerks or salespersons in 1960.

Of the major occupations for girls, secretarial positions were ranked third in importance. Thirty per cent of the women were employed as clerks and salesladies in 1960 and this figure was projected to increase. It appeared from the standpoint of student numbers that office occupations education was meeting the needs of the labor market.

During the past two years the program was strengthened by increasing the number of electric typewriters, expanding the office machine program, ordering a dictating laboratory, and engaging in a research project in typing.

Technical education in chemistry and electronics was elected by four per cent of the vocational-technical students at the secondary level. Since 1964, tool design technology was added to the existing technical education curriculum to expand technical education to three offerings. Programs in chemistry and electronics were readily justified on the basis of labor market figures. However, it was difficult to justify the introduction of technical education at the secondary level when measured in terms of learning efficiency, students' objectives and employment records of graduates.

The existing vocational-technical schools, the proposed area vocational-technical school, the community college, and the Commonwealth Campus, among other educational institutions serving the area, must be guided by a carefully prepared master plan for education. Uncoordinated programs could be disastrous. The articulation must be such that gaps or duplications among and within the kinds and levels of programs are at a minimum.

The city school system was a participating district with a community college. Consideration might be given to transferring post-high school programs now conducted in the high school to the community college. It was suggested by some that the technical education program would become a part of the community college program in the future.

Trade and industrial education enrolled 32 per cent of the vocational students. Girls were not enrolled in any of the trade and industrial programs. The twelve programs offered were in line with the needs of the community but the number of programs appeared to be limited. Offerings such as child care training, cosmetology, apparel and textile training, and restaurant practices, which are typically elected by girls, were noticeably absent from the program in this city. Likewise, offerings in health occupations education were not provided in the total program at the secondary level. There were, however, some post-secondary programs available.

Shortcomings relative to a more complete vocational-technical education, especially for girls, will be rectified in part when the proposed area vocational-technical school is constructed. Plans were made for a school which would accommodate 1,700 students in some 35 programs. Girls will be able to select courses from commercial art, cosmetology, fashions industries, food preparation and service, and health services. The proposed programs were an indication that adjustments of vocational education were being made to meet the needs of the labor market. It appeared that health occupations education will not make an impact upon the labor market following the adjustment because the planned program was narrow and limited. However, it was a beginning.

III: A LARGE PENNSYLVANIA CITY

Vocational Education Program

Nearly 30 per cent of the high school population, in 1964-65, was enrolled in vocational education in the large city in Pennsylvania. This percentage falls sharply to six per cent if the enrollment of females in office occupations is excluded.

The penetration of vocational education is significantly lower than in the small and medium-sized cities. Probably one of the factors to be taken into account is the large Negro student population, most of which, for a variety of reasons, has not qualified for entrance into the vocational education programs. To offset this factor, the large city has instituted a trade preparatory curriculum designed to give a broad occupational training.

Agricultural education was not offered by vocational education at the secondary level. A program in general agriculture, however, provided training for some 289 students. Vocational home economics was a token program with 93 girls, or less than one per cent of the vocational enrollment.

Distributive education attracted both boys and girls into the program. The 491 students attending distributive education classes made up three per cent of the vocational education population.

The 29 offerings in trade and industrial education attracted 2,724 students, or almost 17 per cent of the vocational enrollment. Only boys were enrolled in 18 of the offerings, only girls in 3, and both boys and girls were enrolled in five of the trade and industrial education offerings. Boys made up 78 per cent of the enrollment.

Office occupations education had an enrollment of 13,041 students, or almost 80 per cent of the total vocational education enrollment. The figures did not include the 5,072 students taking personal use courses and those enrolled in occupational education programs, including the trade preparatory programs. Girls dominated the office occupations education program—85 per cent of the enrollment.

In summary, 96 per cent of the vocational enrollment in the large city high schools was in either office occupations or trade and industrial education. The enrollment in office occupations education was predominantly female; the enrollment in trade and industrial education was predominantly male. The total vocational education enrollment figures showed that approximately three girls were enrolled for one boy in vocational education in the large city.

Employment Patterns

Employment was well-dispersed in the large city area with 40 per cent of the occupations accounting for the employment of slightly more than half the male work force. A large number of the men were employed as truck drivers and deliverymen, salesmen and sales clerks, salaried managers and officials in manufacturing and retail trades, machinists and job setters, automobile mechanics, janitors, porters, and carpenters.

Employment in women's occupations was also well-dispersed in the large city area with one-third of the occupations employing slightly more than half the women. Large numbers of women were employed as secretaries, retail saleswomen, private household workers, waitresses and counterworkers, school teachers, apparel and textile operatives, and nurses.

The Pennsylvania State Employment Service reported in 1964 that during recent years manufacturing employment had been declining in the city. The largest decline was in the nondurable goods industries. Industries which accounted for a loss in jobs were textile products, 35,000 jobs; apparel and related products, 9,200; leather products, 5,600; and tobacco products, 4,700.

It was further reported by the Pennsylvania State Employment Service that non-manufacturing employment had been increasing and about two-thirds of all workers in the large city area were non-factory workers. The increase in non-manufacturing jobs occurred in the service industries (including forestry and fisheries) which provided an additional 64,700 jobs between 1950 and 1963. Employment was up for state and local government employees (primarily teachers); wholesale and retail workers; finance, insurance and real estate personnel; and self-employed and domestic workers.

The Pennsylvania State Employment Service estimated in 1964 that approximately 75 per cent of the jobs available to high school students in the large city area were in the following areas: wholesale and retail trade, financial institutions, restaurants, nursing, repair services, automobile repair and service stations, small contractors and miscellaneous small business. Shortages of employees through 1967 were expected in the following occupations: sewing machine operators, maintenance mechanics, maids and janitors, manufacturing assemblers, waiters and waitresses, manufacturing inspectors, kitchen workers, nurses' aides, nurses, trailer-truck drivers, route and deliverymen, secretaries and stenographers, telephone operators, machine-tool operators, stationary engineers, cooks, sales clerks, purchasing agents and retail store buyers, and orderlies. A surplus of workers existed largely in various clerical and technical fields. Specifically, a surplus of workers anticipated was as follows: bookkeepers, cashiers and tellers, typists and clerk-typists, office machine operators, stock and shipping clerks, general office clerks, general industry clerks, barbers and beauty operators, electronics technicians, draftsmen, and electronics mechanics.

Adjustments in Vocational Education to Meet the Change in the Employment Patterns

Vocational education in the large city was not training a sufficient number of skilled workers. Only 30 per cent of the high school population was enrolled in vocational education. Secondly, not all of the vocational services were represented and enrollment in those represented was not adjusted to meet the needs of the employment pattern.

A general agriculture program with some 289 students was not preparing students for entry into agricultural occupations but rather for admission into schools of higher education. The instructors were not generally in contact with the community nor did the administration utilize the agricultural advisory committee. The vocational educators in agriculture were unaware of the agricultural occupational needs of the community.

The Pennsylvania State Employment Service reported an increase in its number of jobs in the service industries, including forestry and fisheries. It was evident that small animal park beautification and conservation, agricultural mechanics, and agri-business courses-of-study with occupational objectives should have been considered for the total program.

Since 1965, when the data were collected, the general agriculture program was accepted into vocational education as a vocational program. Vocational educators were employed to orient this program toward occupational training.

Distributive education attracted 212 boys and 279 girls to the large city program during the 1964-65 school year. Among other occupations, a high proportion of men in the large city area were employed as salesmen and sales clerks or were salaried managers and officers in the retail trades. Likewise, a large number of women were employed in the retail trades as saleswomen, waitresses, and counterworkers.

The Pennsylvania State Employment Service reported an upward trend in the employment of wholesale and retail workers. Furthermore, it expected a shortage of employees through 1967 in sales, purchasing and retail store occupations.

Wholesale and retail trade occupations make ideal entry jobs for many high school graduates. This fact, along with the need outlined above, would prompt the forecast that distributive education programs in the large city be expanded to enroll more students.

Vocational home economics in the large city secondary schools had 93 girls enrolled while 8,075 students were enrolled in the general home economics program in grades 10 to 12. Only one per cent of the students enrolled in home economics in city schools was in vocational home economics. The emphasis was on homemaking rather than occupational training.

In the large city labor area substantial numbers of women were employed as private household workers, waitresses and counterworkers, and apparel and textile operatives. The data showed that graduates with home economics occupational training could find entry level jobs in restaurants as waitresses and waiters or kitchen workers, and cooks, and in hotels and motels as maids and janitors. Shortages of employees through 1967 were expected in these job classifications.

Trade and industrial education supplied home economic-type courses in child care training, drapery sewing, dress making, and restaurant practices.

A project was in progress to institute occupationally oriented home economics programs in food services and child care services. At least five, and possibly six, of the large city high schools were expected to be operating vocational home economics programs during the 1967-68 school year.

Vocational home economics in the large city was expanding by developing new courses and by penetrating additional comprehensive high school programs. The process was a slow one. The program was narrow in course offerings and limited in enrollment. It was not graduating a sufficient number of students.

Office occupations education had an enrollment of 18,113 students in the large city high school. It was estimated that 72 per cent of the above enrollment was in vocational education. Eighty-five per cent of the students in office occupations education were girls. Office occupations education, a new program in vocational education, was without the necessary guidelines to provide accurate enrollment figures during the 1964-65 school year.

As a point of information, the business and office occupational group had been the fastest growing area of employment since 1900. Today it consists of 3.1 million secretaries, stenographers, and typists and 8.5 million other clerical employees, or 15.9 per cent of the total number of persons employed in America. Each year approximately one-third of the high school graduates who go into employment enter the world of work through office occupations. Data reveal that 6 out of 10 of the employed girls, and 1 out of 10 of the employed boys, start their careers in office work.

The figures of the Pennsylvania State Employment Service reveal that a large number of women were employed as secretaries in the large city area. The Service noted that shortages of secretaries and stenographers were expected through 1967. At the time a surplus of bookkeepers, cashiers and tellers, typists and clerk-typists, office machine operators, stock and shipping clerks, general office clerks, and general industry clerks was evidenced in the large city area.

Office occupations education was in the process of becoming more vocational. Policy had been established and guidelines for vocational programs were written. Programs were in the various stages of implementation.

In the large city school system, changes which had been made in office occupations education since 1964-65 were as follows: (1) office practice courses were revised to include key punch simulation and non-machine instruction in data processing, (2) courses in unit record data processing were established at two schools, (3) a clerical practice course was designed to stress civil service preparation, (4) a commercial magnet program with the latest equipment was implemented to train students in accounting, key punch operation, unit record data processing, and legal and medical secretarial work, and (5) every high school was equipped with a room full of electric typewriters and almost all of the high schools had stenographic laboratories.

The office occupations education program in the large city had ample student enrollment. The changing programs and the new equipment were indications that educators were attempting to adjust to meet the needs of the large city labor force. The need was for more secretaries and stenographers.

Technical education was offered on an extremely limited scale by the large city schools at the secondary level. Post-secondary and extension programs were offered in the following areas: drafting, electronics, electronic data processing, and medical assistant technologies.

A surplus of workers existed in the large city area largely in the technical fields, according to the Pennsylvania State Employment Service. Specific occupations relative to technical education in which a surplus of workers was anticipated were electronics technician and draftsmen.

Trade and industrial education in the large city offered 29 programs to 2,724 students, or about 17 per cent of the vocational enrollment. Boys dominated the program with 18 offerings selected by boys only. Male students accounted for 78 per cent of the trade and industrial education enrollment.

Courses and programs taken by boys only included automobile maintenance, baking, cabinet making, carpentry, mechanical drafting, general electrician, foundry practice, machine shop, pattern making, plumbing-heating-cooling, printing, radio-television, refrigeration-oil heat, sheet metal, tailoring, textiles, upholstery, and welding. Both boys and girls elected commercial art, cosmetology, industrial chemistry, optical mechanics, and restaurant practices. Courses and programs taken by girls only were child care training, dental assistant, drapery sewing, dress making, power machine operation, and practical nursing.

A substantial number of men in the large city area were employed as truck drivers, machinists, automobile mechanics, janitors, carpenters, and porters. Women were employed as household workers, waitresses and counterworkers, apparel and textile operators, and nurses. The above listed occupations reflected upon the kinds of occupational training needed in trade and industrial education.

In light of the employment pattern, it would appear that training classes related to instruction in textiles, and apparel production could be de-emphasized in the large city schools. Courses and programs in health occupations, service occupations, and some of the building trades should be expanded. Specifically, it would appear that programs for training tractor-trailer drivers, janitors, porters, masons, stationary engineers, and others would be worthy additions to the program. Courses and programs for women might include cooking, maid service, and nurses' aides training. While gaps in the vocational program are being explored, it is desirable to avoid duplication of course offerings.

For example, home economics education and trade and industrial education both had courses on child care training. A planned system of communications between and among the vocational services in a large school system is a necessity—especially during a period of program expansion.

IV. SUMMARY AND CONCLUSIONS

In reviewing the congruence between the high school enrollments in vocational programs and the occupational composition of the local labor markets in the three cities, a number of imbalances were noted. The most pronounced discrepancy was found for distributive education. In each of the three cities clerks and salespeople comprised one of the largest proportions of the work force. Yet distributive education enrolled only about two or three per cent of the vocational students who represented less than one per cent of the total student enrollment.

Another discrepancy was the low percentage of trade and industrial students in comparison with the proportion of workers employed as craftsmen and foremen. These enrollments would suggest that graduates from the trade and industrial programs would be in heavy demand. Interviews with the graduates on their employment experiences, reported in Chapter 7, did not show this to be the case. Only about half of the trade and industrial graduates obtained jobs that were related to their training.

The office occupation program appeared to be enrolling adequate numbers of students when compared to labor market needs. It was doing so, however, by offering a limited number of vocational options to young girls. It is true that a large proportion of the female labor force was composed of clerical and secretarial workers, but there was considerable demand in other areas for which, generally, the schools were not preparing young girls.

The expansion of employment in service occupations was not reflected in the school offerings which still had a predominant orientation towards manufacturing.

Much of the reason for the lack of congruence may lie not with the schools, but with the nature of the jobs involved. The service occupations provide a good example. Traditionally they have paid lower wages and had poorer working conditions than most other occupations. Though these conditions have changed for many service occupations, the popular image of these jobs may still cause young people to avoid them. The same explanation could be offered for the small enrollments in distributive education.

It can be asserted that, in general, the vocational offerings in the three cities in Pennsylvania were not broad enough to meet the needs of the students or the communities. This is not to deny that each of the cities revealed some efforts to expand the number of course offerings to meet the needs of the students. However, it is quite evident that, except for the large city which was experimenting with a trade preparatory program, the vocational educators were not developing broad occupational programs nor were they devising experimental programs consistent with the needs of the students.

It should not be inferred that congruence between program enrollments and local employment patterns should be the only criterion used to judge the extent to which vocational educators have adapted their programs to current trends. The comparisons presented in this chapter examine the vocational programs in the three cities by one of the standards that vocational educators have usually set for themselves. It may not be a very useful criterion by which to judge their efforts. The unstable career plans of young people, changing nature of technology, low status of some occupations, and the high degree of geographic mobility among young workers (particularly in the smaller communities) are some of the factors which tend to make attempts to achieve congruence very difficult. The more feasible approach would be to provide broad training for a larger labor market. In addition, if the recommendations for broader occupational training are followed, as discussed in Chapter 8, there would be less need to develop specific programs for local labor market needs.

4

EVALUATION OF VOCATIONAL EDUCATION PROGRAMS

In the preceding two chapters it was concluded that vocational education programs in three selected cities in Pennsylvania were not reaching the large majority of students who enter the labor force directly from school (whether graduates or not) and that there appeared to be some desire on the part of non-vocational students to carry on occupational exploration. Such exploration may have reflected dissatisfaction with some of the courses in the academic curriculum or an inability to meet the requirements of the vocational curriculum. It was also concluded that the vocational programs offered in the three cities were not sufficiently related to the changing employment requirements of the communities.

Aside from these aspects of vocational education an attempt was made in this study to evaluate, by a team of experts, the strengths and weaknesses of the individual programs actually offered, so as to assist vocational educators in these and other communities in the conduct of their programs.

As it will be observed, in general, the actual conduct of the programs received satisfactory, but not outstanding, ratings by the evaluators. How the students reacted to these programs is discussed in detail in Chapter 5.

This chapter presents and analyzes data relative to the strengths and weaknesses of vocational education in three selected Pennsylvania cities as found during the 1964-65 school year and reported by a team of specialists. Programs were evaluated in a selected small, medium-sized, and large Pennsylvania city. The programs for agriculture, distributive education, home economics, office occupations, technical education, and trade and industrial education were rated in each of the three city school systems.

The data on strengths and weaknesses were obtained from narrative reports, written by investigators who visited the schools and studied the programs, and from profiles prepared by a team of specialists who evaluated the vocational programs. The six categories evaluated on the profile, aside from a general rating, were: aims and objectives; physical facilities; instructional staff; instructional program; guidance, placement, and follow-up; and socio-economic change. The items were assigned ratings of from 1 to 5, with the 1 being a low rating and the 5 being a high rating.

Agriculture

Table 15 shows that vocational education in agriculture was not common to vocational curricula in the selected Pennsylvania city high schools. The program which did exist was not vocational, was rated between average and inferior, and was considered unsatisfactory for occupational training. While few strengths could be cited for vocational agriculture in these city schools, credit was granted for the general program which did exist.

Table 15. Ratings of Items Relative to High School Agriculture Programs in Three Cities in Pennsylvania

Item	Size of City			Average
	Small*	Medium*	Large	Rating
General	—	—	3.0	3.0
Aims and objectives	—	—	2.0	2.0
Physical facilities	—	—	2.0	2.0
Instructional staff	—	—	3.3	3.3
Instructional program	—	—	3.0	3.0
Guidance, placement and follow-up	—	—	2.0	2.0
Socio-economic change	—	—	2.5	2.5

* Agriculture programs were not offered in the schools.

Until the Vocational Education Act of 1963, vocational agriculture had as a major objective the "establishment of boys in the business of farming." This was an unreal objective for city programs and as a result vocational agriculture was not generally included in the city vocational curriculum. When the attempt was made at the local level to adapt an agriculture program to off-farm agricultural occupations, objectives were not stated clearly.

Since vocational agriculture in the city schools did not meet the requirements established, it was not reimbursed nor was it supervised by personnel from the State Department of Public Instruction. Lack of finances and supervision resulted in inadequate facilities, courses of study which were not updated, a staff which did not receive vocational in-service training, and a program which was not training students for agricultural occupations. The weaknesses in the almost non-existent city agriculture programs were many and serious.

Federal legislation during 1963 liberalized the objectives of vocational agriculture to include training for off-farm agricultural occupations. The new legislation supported off-farm agricultural courses in ornamental horticulture, conservation and recreation, agri-business, and a host of others with agricultural occupational objectives. The new legislation encouraged the promotion and establishment of programs where they did not exist before.

Distributive Education

Distributive education programs were found in both comprehensive high schools and separate vocational schools in the three cities. The posture of the program was such that it appeared to be equally adaptable to either kind of school setting. Even with this characteristic, distributive education had not been able to attract a reasonably fair share of students into the program.

Students in distributive education programs were predominantly female with eight out of ten enrollees being girls.

Unlike the agricultural programs surveyed in the three cities, distributive education programs were given direction by aims and objectives which were clearly defined.

Physical facilities in Table 16 were rated a 4.4 out of a possible 5 rating which was outstanding. In general, the facilities were adequate, but old. The demands made by distributive education on facilities in terms of special conditions was not as exacting as for some of the other programs in vocational and technical education.

Table 16. Ratings of Items Relative to High School Distributive Education Programs in Three Cities in Pennsylvania

Item	Size of City			Average Rating
	Small	Medium	Large	
General	5.0	4.0	4.4	4.5
Aims and objectives	5.0	5.0	4.2	4.7
Physical facilities	4.0	5.0	4.2	4.4
Instructional staff	4.7	4.7	4.5	4.6
Instructional program	5.0	5.0	3.2	4.4
Guidance, placement and follow-up	3.0	4.0	3.8	3.6
Socio-economic change	5.0	4.0	4.4	4.4
Average of items	4.5	4.5	4.1	4.4

The instructional staffs were rated a 4.6. Distributive education coordinators were rated outstanding in "personal qualifications" and for "educational preparation." They did not rate as high on the item, "skilled practical experience."

The instructional programs were generally developed with some depth in the small and medium city schools. The quality of the programs was rated superior.

In the large city, teacher coordinators tended to favor one or more textbooks which were used as the basic course of study. A change of thinking as it applies to instruction in distributive education on a reimbursable basis was in order. Enrollments in retailing programs were several times larger than the numbers taking distributive education in the reimbursable program.

Probably the weakest area of the distributive education program and all vocational programs rated was guidance, placement and follow-up of students. The significantly lower rating given this aspect of the program would indicate a serious weakness which should be corrected to strengthen the total program.

An average rating of 4.4 would indicate that the distributive education program was attuned to socio-economic needs of the community. On the other hand, low enrollment figures contrasted to increasing demands for salespersons. Distributive education was not training in quantity the manpower required by the business world.

Home Economics

Home economics in the city schools studied was offered at several levels or tracks. Course offerings provided training for the disadvantaged and also for the academically talented girls. Vocational and general home economics shared student enrollment for courses.

Aims and objectives of home economics education were set forth clearly and precisely as reflected by an overall rating of 4.6. The rating was somewhat misleading in that the aims and objectives were not revised to include preparation for occupations outside the home.

Except for the large city schools, the physical facilities were generally adequate, attractive, and well maintained. Facilities varied in the large city from average to sub-standard. For the most part they were described as antiquated, inconvenient, and unattractive. Reference materials and supplies were plentiful and up-to-date in all departments.

The instructional staff in all schools in the three cities rated superior to outstanding. Staff members were well prepared educationally and had an adequate background of practical experience. Loyalty, dedication, and sincere interest were the terms used to describe the teachers of home economics.

The instructional programs in home economics rated high even though offerings were not broadened sufficiently to merit a high rating. Descriptive reports showed that occupational training, while not a part of the city programs, was well into the "awareness stage" of the minds of the educators.

Table 17. Ratings of Items Relative to High School Home Economics Programs in Three Cities in Pennsylvania

Item	Size of City			Average Rating
	Small	Medium	Large	
General	5.0	4.0	4.0	4.3
Aims and objectives	5.0	4.0	4.7	4.6
Physical facilities	5.0	4.5	3.7	4.4
Instructional staff	4.7	5.0	4.3	4.7
Instructional program	5.0	4.5	4.0	4.5
Guidance, placement and follow-up	4.0	4.0	4.0	4.0
Socio-economic change	5.0	4.0	3.3	4.1
Average of items	4.8	4.3	4.0	4.4

The guidance, placement, and follow-up item was rated lower than the other items but fared better in home economics than in the other vocational programs. There are several explanations: The program was built upon the occupation of homemaking and was offered to girls at several levels. Guidance was not a problem because homemaking was easily justified. Placement was a by-product of marriage, and married women continued full or part-time work in the home. The close relationship of the program objectives to the primary female roles of wife and mother made guidance, placement, and follow-up a less significant part of the total program. Guidance, placement, and follow-up will become more important to the total program as home economics takes on the responsibility of training for related occupations as well as homemaking.

Home economics programs were preparing girls for homemaking but not for employment outside the home. The need for food handlers, institutional and motel housekeepers, nursery and child care attendants, and other skilled workers are needed and they were not being trained in home economics programs.

Vocational and general home economics education programs provided excellent homemaking training at all levels for girls. Homemaking was a natural for girls to take, for women to teach, and for graduates to pursue. At the time of the study educators were aware that home economics must broaden its program to include training for occupations outside the home. The major tasks were to write courses of study, prepare instructional staff and provide adequate facilities.

Office Occupations

Office occupations, often referred to as business education, did not come under the realm of vocational education in Pennsylvania during the 1964-65 school year. It came under general education or occupational education in that the program was not reimbursed by vocational funds.

A strength of office occupations education was that in the three selected cities it attracted three times more students than all the other vocational education services together. The large enrollments were assumed to be somewhat indicative of student interest in the program. Office occupations education adapts well to the comprehensive high school curriculum or the vocational-technical school curriculum.

The aims and objectives in office occupations education were rated outstanding in all schools. It would appear that aims and objectives were evaluated for courses rather than for a program. Apparently the trend will be to emphasize sequences of courses which meet training requirements for business-related occupations.

Office occupations courses were referred to as "quality" or "high caliber" courses. Office occupations training lends itself to quantitative measurement so that quality control becomes an integral part of the student evaluative process.

The guidance, placement, and follow-up aspect of office occupations education was not rated as high as the other items nor was it rated as well for the larger city as for the smaller ones. It was standard procedure for guidance personnel to direct students into the courses. The office occupations staff placed graduates and did the follow-up studies on them. Guidance, placement, and follow-up activities were not a cooperative effort in that guidance personnel and office occupations education staffs worked independently of each other.

Office occupations education was definitely moving in the direction of data processing. Expensive equipment had been installed in schools but a very limited number of students were using it. The question arises as to the need in public education for training in data processing other than key punch training for the office occupations field. Many persons are in favor of placing data processing courses in the technical school at the post-graduate level. Business was interested in securing data processors with an associate degree or better and with some sophistication in the technology.

Table 18. Ratings of Items Relative to High School Office Occupations Programs in Three Cities in Pennsylvania

Item	Size of City			Average Rating
	Small	Medium	Large	
General	5.0	5.0	4.3	4.8
Aims and objectives	5.0	5.0	5.0	5.0
Physical facilities	4.0	5.0	4.3	4.4
Instructional staff	5.0	4.7	4.3	4.7
Instructional program	4.0	4.0	4.5	4.2
Guidance, placement and follow-up	4.0	4.0	3.5	3.8
Socio-economic change	4.0	4.0	4.7	4.2
Average of items	4.4	4.5	4.4	4.4

Technical Education

Three courses in technical education were offered at the high school level in the small city, two in the medium-sized city, and two in the large city. The limited amount of technical education offered at the high school level indicated the reluctance of educators to introduce this kind of program into the high school curricula. The somewhat average rating of technical education shown in Table 19 may reflect the concern of the evaluators for "courses out of place."

Table 19. Ratings of Items Relative to High School Technical Education Programs in Three Cities in Pennsylvania

Item	Size of City			Average Rating
	Small	Medium	Large[*]	
General	4.0	3.0	—	3.5
Aims and objectives	4.0	4.0	—	4.0
Physical facilities	4.0	4.0	—	4.0
Instructional staff	4.0	4.3	—	4.1
Instructional program	4.0	4.0	—	4.0
Guidance, placement and follow-up	3.0	2.0	—	2.5
Socio-economic change	4.0	4.0	—	4.0
Average of items	3.9	3.6	—	3.7

[*] Ratings were not available.

The aims and objectives of the technical courses were in accord with those given at the post-high school level. Since employment appeared to be the major purpose for instituting the technical courses, there was some question about the stated aims and objectives relative to high school training. Neither teachers nor students were guided by the stated course objectives.

The physical facilities, with respect to classroom space, heat, light, and power and in relation to available equipment and safety standards, were rated superior. Storage space and locker facilities were not as satisfactory as the other physical facilities.

The instructional staff received the highest rating of the seven items scored on technical education. Teachers of technical courses appeared to have the appropriate background of experience and also the professional preparation required for teaching.

The instructional programs were rated superior. Courses of study were based on an analysis of the technology which accounted for appropriate and comprehensive programs. Cooperative work experience programs were not part of technical education.

Guidance, placement, and follow-up in technical education programs in the three city high schools in Pennsylvania was rated inferior. Guidance counselors were not assigned to vocational-technical education duties. Vocational directors had assumed the duties along with their administrative and supervisory responsibilities. The maturity of students desired, the extended length of training time required, and the placement results reported were factors for concern for technical programs at the high school level.

The method of student selection for technical courses was questionable. It was evident that many students who were planning to enter college after graduation were referred to technical programs for three years. Fifty per cent of the graduates from some of the technical courses were continuing their education at the college level. The technical courses were new additions to the vocational curriculum and follow-up records were not begun.

The technical programs were added to the vocational curriculum on the basis of employment opportunities in the immediate or greater community area. High school technical programs were not making an impact on the communities because they had not graduated students, many of the graduates continued education at college, and the graduates of one program were unemployed. It would seem logical that most technical programs, by inferred nature and level, were designed for post-high school training, preferably at the associate degree level. With the growing number of post-high school institutions it would seem that technical education should continue and expand in this kind of educational setting.

Trade and Industrial Education

The three city school systems offered a total of thirty-one different kinds of courses in trade and industrial education. Twenty-nine different kinds of courses were offered in the large city school system, twelve in the medium, and nine in the small city school. School systems in the large city offered broad, diversified programs in trade and industrial education. The number of programs offered was directly related to the people served. The large programs did not exhibit the quality shown by the smaller programs.

The aims and objectives of trade and industrial education shown in Table 20 were rated superior, average plus, and average in small, medium, and large city schools, respectively. Existing conditions which tended to lower the ratings on aims and objectives were (1) the lack of stated objectives, (2) course objectives which differed from teacher objectives, and (3) course objectives (occupational preparation) which differed from student objectives (college entrance). Errant aims and objectives, however, were the exception rather than the rule for the trade and industrial programs.

Physical facilities for trade and industrial education varied considerably among and within school systems in the three cities. Facilities in the small city schools were old, but adequate. Facilities and equipment in the medium-sized city schools were rated superior. Facilities and equipment in the large cities were given a rating of less than average. Extremely poor and obsolete equipment and the lack of space were the basis for the unsatisfactory rating.

The instructional staffs from the schools in the small and medium-sized cities were rated superior. Large city staffs in trade and industrial programs were rated average. It appears that quality in staff was somewhat affected by size of staff.

Instructors were employed generally because of occupational competency and educational achievement. Some instructors failed to keep up-to-date in trade innovations and professional education. Others exhibited disorder and lack of organization as observed in their classrooms or shops.

Instructional programs were rated 4.0, 3.5, and 2.7 for small, medium, and large school systems, respectively. In the better instructional programs students were doing work which compared in quality and quantity to work done in factories. The work was generally associated with a production activity so that one student's output would have to be coordinated with that of others in the class. The better instructional programs had revised courses of study, up-to-date instructional materials used extensively and organized efficiently, a supporting program embracing a variety of academic subjects at various levels for vocational students, and cooperative employment as an integral part of the program.

Table 20. Ratings of Items Relative to High School Trade and Industrial Programs in Three Cities in Pennsylvania

Item	Size of City			Average
	Small	Medium	Large	Rating
General	4.0	3.5	3.0	3.5
Aims and objectives	4.0	3.5	3.2	3.6
Physical facilities	4.0	4.5	2.8	3.8
Instructional staff	4.3	4.3	3.7	4.1
Instructional program	4.0	3.5	2.7	3.4
Guidance, placement and follow-up	2.0	2.0	2.2	2.1
Socio-economic change	4.0	3.5	2.5	3.3
Average of items	3.8	3.5	2.9	3.4

The "average" instructional programs were faulted for the lack of updated instructional materials, low work standards, and the "project approach" to instruction. "Toy-sized" buildings, shoe shine boxes, and "dust pan" level work were considered unrealistic.

In general, trade and industrial programs housed in the separate vocational schools of the large city rated average or better while the programs housed in the comprehensive high schools rated inferior. In the small and medium-sized cities, where trade and industrial education was a part of the comprehensive high school program, it was rated superior and better than average. It was apparent that good instructional programs can be had in both the vocational and comprehensive school setting.

Guidance, placement, and follow-up for trade and industrial education was rated inferior for programs in the small, medium, and large cities. Reasons given for the negative ratings were: (1) guidance was not an integral part of the vocational-technical department, (2) inappropriate guidance in terms of student selection for vocational courses was observed, and (3) placement and follow-up of students varied from almost no organized procedure to a formalized one. It appears that the guidance functions were carried on by the vocational staff with no released time rather than by the guidance staff, or both staffs working together. There was a noted absence of admission standards for the various programs in trade and industrial education.

In some cases, students in trade and industrial education were being trained for employment in communities other than where they lived. Graduates of some courses were not finding employment, and those of other courses were attending college. Some courses were filled with students who could never be qualified or recommended for placement even at the operator level. In general, however, most students were being trained for work and were finding jobs.

Trade and industrial education was characterized by its "umbrella concept" for administering vocational offerings. It helped to satisfy employment needs through many and varied programs. Broad and diversified offerings do not necessarily lower the quality of a total program but are apt to do so. The more inclusive a program becomes, the greater will be the range in quality among offerings. Should this be the case with trade and industrial education, it would do well to relinquish the clusters of courses related to home economics and health occupations education. As home economics moves into occupational training and as health occupations education becomes of age, it may be advisable to give these service areas the responsibility to administer their own respective programs for reasons of economic efficiency and educational proficiency.

Summary and Conclusions

An examination of the vocational offerings in three cities in Pennsylvania reveals that the three programs (see Table 21) which received a ranking of superior were distributive education, home economics education, and office occupations education. Each of the superior-rated programs had unique advantages which strengthened its rating. Distributive education was a small and highly organized program with well-defined objectives. Home economics education was girl-oriented and was taught on several levels to meet the needs for all students. Office occupations education was peculiar in that it had a built-in quantitative measuring system for evaluating student progress and proficiency which was accepted and internalized by the students.

The three programs which rated average or less than average were agriculture, technical, and trade and industrial education. Each program rated average or less than average had handicaps which weakened its rating. The general agriculture program was evaluated by vocational criteria. Technical education had the problem of teacher, student, and course objectives which were not in harmony. Technical education, because of the level of the program, was not comfortably situated in the secondary school program. Trade and industrial education, a broad and all-inclusive program, suffered from the wide range in the quality of programs.

Table 21. Summary Ratings of Items by Vocational Education Programs for Three City High Schools in Pennsylvania

Item	Agriculture	Distributive Education	Home Economics	Office Occupations	Technical Education	Trade and Industrial	Item Average
General	3.00	4.46	4.33	4.77	3.50	3.50	3.98
Aims and objectives	2.00	4.73	4.57	5.00	4.00	3.57	3.98
Physical facilities	2.00	4.40	4.40	4.43	4.00	3.77	3.83
Instructional staff	3.30	4.63	4.67	4.67	4.15	4.10	4.25
Instructional program	3.00	4.40	4.50	4.17	4.00	3.40	3.91
Guidance, placement and follow-up	2.00	3.60	4.00	3.83	2.50	2.07	3.00
Socio-economic change	2.00	4.47	4.10	4.23	4.00	3.33	3.69
Program Average	2.47	4.43	4.37	4.44	3.74	3.39	3.81

Table 21 shows that of the seven items rated for vocational education in the three cities, the instructional staffs were rated highest with a 4.25 out of a possible 5 score. Teachers were well-prepared academically and vocationally for teaching. They were dedicated to the training of students for gainful employment.

The items, aims and objectives and instructional programs, were rated high with scores of 3.98 and 3.91 respectively. Both items were influenced by the instructional staff and the high scores support the relationship.

Physical facilities were rated average among the items scored for the vocational education programs. The proposed construction of area vocational-technical schools in at least two of the three city areas would strengthen the satisfactory rating given physical facilities in this study.

Guidance, placement, and follow-up and responsiveness to socio-economic changes ranked lowest among the seven items with mean scores of 3.00 and 3.69 respectively. Guidance and counseling are more fully explored in Chapter 6.

Guidance, placement, and follow-up was not being done satisfactorily or in a systematic manner. The problem, common to each vocational service for all vocational programs in the three cities, was a serious weakness of vocational education.

Teachers can and should accept and were accepting part of the guidance, placement, follow-up responsibilities. Hopefully, a designated staff of vocationally trained guidance personnel would be employed to counsel, place, and follow-up students and keep the necessary records. The director or principal of the school did not have time to do the job. School counselors assigned to vocational education preferred to work with college-bound students.

The low rating given to the item "socio-economic change" was expected, and is consistent with the findings in the preceding chapter. Institutional change itself is an evolving process. The school, as an institution, tends to maintain the status quo.

Vocational education in the smaller cities, however, was attuned more closely to the needs of the labor market than that in the large city. Of course, the smaller city school systems had less organizational and administrative machinery to deal with in order to affect change.

The problem, regardless of the cause, points up the need for a continuous program for evaluating vocational education. Vocational education, to be most effective, must graduate students who are in demand on the labor market. To match people with jobs requires the knowledge and cooperation of businessmen, community agency personnel, general educators, and vocational educators to plan for the future rather than to attempt to become simply "up-to-date."

5

THE STUDENT LOOKS AT VOCATIONAL EDUCATION

In the preceding chapters vocational education in three selected cities in Pennsylvania was examined on the extent to which it has attracted students, the extent to which it has met the changing employment needs of the community, and the extent to which the programs as conducted were satisfactory, from the point of view of the school as an institution.

On these criteria it could be asserted, at this point, that the vocational curriculum in the three cities, at least as observed in the school year 1964-65 (and, in some instances, later), has not been satisfactory. It is true that during the past several years the vocational education program in Pennsylvania has been expanding, in terms of money spent and buildings constructed or to be constructed. The question, however, is: Has the expansion taken place in the direction which meets the needs of the students who enter the labor force and who do not go on to higher education in any form? It is recognized that there may not have been adequate time to develop new programs. It is hoped that if vocational education does have plans for new directions, the observations presented may assist the vocational educators in the development of their plans for expansion.

It was thought that the students' evaluation of their high school experience would also be of assistance. Thus, in the three selected cities a total of 1,780 graduates were interviewed, first, to explore the various dimensions of their relationship to the school; and, second, to determine their post-graduate employment experiences. The first objective is discussed in this chapter and Chapter 6. The second is discussed in Chapter 7.

In order to analyze the experiences of the graduates, both in school and in their work, comparisons are made among the three curricula—vocational, academic (college preparatory), and general. The latter includes those students who do not, or are not able to, select the other two. The purpose of this comparison is to avoid the possibility that the assumption is made that any weakness found by the students in one curriculum might have been corrected by the selection of another curriculum. But this does not preclude the possibility that a curriculum could be designed that would overcome these weaknesses.

To explore the various dimensions of the relationship between the school and the student this chapter is divided into four sections. Section I discusses the social, economic, and personal variables underlying the choice of a particular curriculum. Section II presents the variables that relate directly to the retrospective evaluations by the students of their school experiences. In this connection the importance of the type of school setting is examined by comparing the attitudes of graduates from a comprehensive and a separate vocational high school. Section III examines the vocational problems of special groups, such as girls and Negroes; and, Section IV contains a summary and conclusions.

I: CURRICULUM CHOICE

If a high school education is to be viewed as preparation for adulthood, it would seem that an intelligent decision regarding one's curriculum is essential. The right curriculum, or track, for an individual is a function of many variables, e.g., his intelligence, interests and aspirations. All such factors should be considered by an individual in selecting a curriculum if his high school career is to be meaningful.

Table 22 lists the major answers given by vocational graduates to the question, "Why do you think you chose the courses you took in high school?" It should be noted that these are the recalled reasons (given at the time of the interview) for the course choices made while the respondent was in high school.

While 56 per cent of the females said they chose vocational education "to prepare for a job," only 22 per cent of the males give this

Table 22. Vocational Graduates' Reasons for Curriculum Choice, by Sex

	Male	Female
	%	%
Prepare for a job	22	56
Prepare for the future—Unspecified	14	12
Interested in subjects	40	13
Prepare for post-secondary education	3	3
Selected easy courses	3	3
Followed school's suggestion	7	3
Outside pressure	5	4
Miscellaneous	5	5
Don't know reason	*	1
Total	99	100
Number	412	342

* Less than one-half of one per cent.

reason. This is a surprising finding especially when it is noted that 40 per cent of the males and only 13 per cent of the females said they chose the curriculum because they were interested in the subjects.

The available psychological evidence indicates that, of all personality variables, vocational interests are the best predictor of eventual occupational choices. Because the number of vocational options available to males in most schools is usually far larger than that available to females, males would appear to be making their choices from a sounder base than females. And, perhaps even more important, the number of jobs deemed "appropriate" for young males is more extensive. These cultural limitations on the vocational choices of young girls are examined more closely in Section IV of this chapter.

Another surprising finding is that only seven per cent of the males and two per cent of the females reported they followed the suggestions of their high schools. Whether this reflects a lack of guidance or a resistance to the schools' suggestions is open to question. This point is discussed further in Chapter 6, which is concerned with guidance and counseling.

Table 23 presents an intercurriculum comparison of the major reasons for course choices.

Table 23. Major Reasons for Course Choices, by Sex, by Curriculum

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Prepare for a job	22	24	1	56	45	8
Prepare for the future—Unspecified	14	14	13	12	12	10
Interested in subjects	40	18	7	13	12	7
Prepare for post-secondary education	3	5	63	3	6	59
Followed school's suggestion	7	7	2	3	5	3
Number	412	277	156	342	450	140

These data do not contain as many surprises. The table does show that 63 per cent of the academic male graduates and 59 per cent of their female counterparts said they chose their curriculum to prepare for post-secondary education. Since few of these graduates did go on, this also implies ineffective guidance or the lack of it. It seems unlikely that in all, or even a majority, of these instances the student was at the last moment unable to attend college because of some unforeseen event. This raises again the question of responsible guidance by a qualified adult in assisting the student in the choice of a meaningful curriculum. And, again, the discussion of this important area is postponed to be treated separately in the chapter on guidance and counseling.

IQ and Curriculum Choice

The academic curriculum was clearly the preferred curriculum of students of above average ability. Table 24 shows that almost half of the students with IQ's above 110 were in the academic track. There were no sizeable differences in the IQ distributions in the other two curricula. The vocational curriculum did not appear to be selecting its students any more than the general curriculum. These two latter distributions were not, however, exactly normal. They were over-represented in the average (90 to 109) range and under-represented in the below average (89 or less) range. This is to be expected of a group, all of whom graduated from high school.

Table 24. IQ of Graduates by Sex and Curriculum

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
IQ	%	%	%	%	%	%
110 or more	20	21	52	19	22	42
90 to 109	67	66	42	64	66	50
89 or less	13	13	5	16	11	8
Total	100	100	99	99	99	100
Number	324	167	105	218	372	107
% of total sample for whom IQ not available	22	40	33	36	18	24

Father's Occupation

Do children of blue collar workers tend to choose the educational track leading to similar occupations and, if so, to what degree is such immobility in families present? Table 25 presents responses to the question, "What was your father's occupation when you were in high school?"

Table 25. Distribution of Father's Occupation While Respondent was in School, by Sex, Vocational Graduates Only

	Fathers of Male Graduates	Fathers of Female Graduates	Occupational distribution of head of families in metropolitan areas[a]
	%	%	%
White Collar:	16	21	47
Professional, technical, managerial, and kindred	8	16	32
Clerical, sales and kindred	8	5	15
Service	7	6	8
Manufacturing and Processing	69	59	44
Specific skills[b]	35	33	39
Nonspecific skills	34	27	5
Agriculture	—	1	1
Not present, Deceased, Retired	7	10	
Total	99	100	100
Number	369	321	

[a] Adapted from U. S. Bureau of the Census, *Current Population Reports,* Series P-60, No. 49, "Income in 1964 of Families and Unrelated Individuals by Metropolitan Non-Metropolitan Residence," 1966, Table 7, p. 19.

[b] The "specific skill" and "non-specific skill" classifications are secondary groupings derived by dichotomizing the D.O.T. titles. See Appendix C for a listing of the occupations which are included in each category. In general, the skilled crafts, trades, and operative occupations are included in the "specific" grouping.

The right hand column, showing the occupational distribution of all heads of households living in metropolitan areas in 1964 is presented for comparative purposes. This is intended to serve as proxy for the occupational distribution of fathers of urban high school graduates, since these data are unavailable.

One fact is quickly apparent from these figures. Over half of the vocational graduates (69 per cent of males and 60 per cent of females) were from blue collar homes. In the broader study from which the Pennsylvania data are drawn, it was found that over 70 per cent of the vocational graduates were from such families. Both these figures point toward an underlying socio-economic basis for the curriculum choices of students, although the situation seems somewhat less pronounced in the three Pennsylvania cities. At the other end of the distribution, only eight per cent of the fathers of males and 14 per cent of the fathers of females were in "professional" occupations.

Answers concerning fathers' occupations were also obtained from graduates of the other two curricula. These results, together with

Table 26. Distribution of Father's Occupation While Respondent was in High School by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
White Collar:	16	25	41	21	21	40
Professional, technical, managerial, and kindred	8	16	26	15	8	28
Clerical, sales and kindred	8	9	15	6	13	12
Service	7	5	6	7	7	5
Manufacturing and Processing	69	55	45	60	58	47
Specific skills	35	35	26	33	33	28
Nonspecific skills	34	20	19	27	25	19
Not present, Deceased, Retired	7	15	7	10	13	8
Total	99	100	100	99	99	100
Number	369	253	144	321	414	124

those from vocational graduates, are presented in Table 26. As would be expected, a larger percentage of the academic graduates had fathers in the white collar occupations, especially the professional, technical, managerial category.

These data support the general finding of other social scientists that one's socio-economic background exerts a major influence on his occupational choices and experiences. The limiting influence of family background is revealed in the ways in which jobs are typically obtained. Informal sources, relatives and friends, provide most job referrals. (See Table 46, page 90). And, in many cases, entering a trade union, especially in one of the skilled trades, depends on having a personal relationship with someone already in the union.

Father's Education

Another indicator of socio-economic background is the amount of formal education which one's father received. Occupation and education are usually correlated. Additional education is associated with the higher ranking occupations. This relationship was found for the graduates surveyed for this study. (See Table 27.) The fathers of academic graduates had had more education than the fathers of the graduates of the general and vocational curricula. As in the comparison of IQ and fathers' occupations, the general curriculum and vocational graduates did not differ from each other to any major extent.

Table 27. Intercurriculum Comparison of Father's Education, by Sex

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
9th Grade or below	43	37	19	37	38	27
High school (10th to 12th)	28	30	30	30	32	33
High school graduate	20	17	32	20	18	21
Post high school training	0	0	1	1	1	2
College	2	4	12	4	3	13
Unknown	7	11	6	8	8	3
Total	100	99	100	100	100	99
Number	398	277	147	314	481	131

Multiple Regression Analysis of Curriculum Choice

The socio-economic variables discussed above were also examined simultaneously through multiple regression. This technique consists of correlating a curriculum with each of the variables which might influence it. These were father's occupation, father's education, IQ, sex, race, and reasons for course choice. Many of these variables are not subject to quantification. There are techniques, however, for translating these qualitative variables into a format that can be handled mathematically. Appendix A discusses the methodology and contains the statistical computations which describe the characteristics of the students most likely to have selected the various curricula.

The typical student who selected the academic curriculum could have been either a boy or girl, with a high IQ, whose father went to college and holds a professional, managerial or technical job. The student's reason for choosing the academic curriculum was to prepare for further education. The student most likely to have chosen the general business curriculum was a white female whose father went to high school. Her reason for choosing this curriculum was to prepare for a job. The vocational student was a male who did not have a high IQ, whose father did not have a clerical or sales job, and who chose his curriculum because of interest in the subjects, or to prepare for a job. The student who chose the general curriculum had almost no identifying characteristics except that the curriculum was chosen because of interest in the subjects.

The implications of these conclusions are significant. First, it can be concluded that, to a large extent, the factors influencing the choice of a curriculum reflect the social and economic environment out of which the student comes. Although the relative IQ of the average student in vocational education is lower than that of the academic student, the question can at least be raised as to whether the measurement of the IQ has a bias towards students from certain family environments.

Second, if environmental factors have such an important influence in the choice of a curriculum, effective guidance and counseling become that much more important. Proper guidance and counseling can attempt to offset these factors and to make the choice of a curriculum more rational and more closely related to a student's potential. But, as will be discussed at length in Chapter 6, the guidance and counseling functions as carried on in the schools studied, for students in all curricula, are less than adequate.

II: ATTITUDES OF GRADUATES TOWARD THEIR SCHOOL EXPERIENCES

Section I has shown that curriculum choice is partly predictable from a student's socio-economic background which affects his interests and, as presently measured, even his ability. This section examines the retrospective attitudes of the graduates of the three Pennsylvania cities towards their high school experiences. These attitudes result from the graduates' perceptions of the treatment which they received during high school. And, in turn, these attitudes can largely determine how these graduates will feel about formal education either for themselves or for their children.

School's Effort to Prepare for Job

The graduates were asked if they felt their high school had made a real effort to prepare them to get a job. Obviously this question has different meanings to the different graduates of the different curricula. A student who received specific job training answers from a different base than a student with academic preparation. These differences can provide a bench mark for evaluating the satisfaction of graduates who were specifically prepared for a job. The favorable answers of graduates of the academic curriculum can be taken as a reflection of a general positive attitude towards their school as well as the job utility of academic preparation. The difference between the vocational and academic graduates indicates the success of the vocational curriculum in carrying out its function of job preparation. These comparisons are shown in Table 28.

The evidence presented in Table 28 is that the more specific the preparation, the more satisfied the students—especially the males. Over half the academic graduates believed their school made a real

Table 28. Respondents' Attitudes Toward Their Schools' Efforts to Prepare Them for Jobs by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
School did prepare	86	70	57	84	82	61
School did not	12	29	43	15	18	36
No answer	2	1	0	1	0	3
Total	100	100	100	100	100	100
Number	411	276	155	337	450	133

effort to prepare them for a job. Almost nine out of ten of the vocational graduates felt this way. It is apparent, from the students' point of view, that the vocational curriculum was more successful. This success, however, must be evaluated against the base of academic training for students who planned to go on to further education. A majority of these students also felt that their training was useful on their jobs.

Perceived Attitudes of Others

In the course of the interviews the respondents were asked several questions designed to measure their perceptions of the attitudes of others towards them. These questions attempted to determine if students from different curricula felt that they had a different status in the school.

The question that detected the greatest difference among the curricula was, "Did you ever feel other students or teachers 'looked-down' on you because of the courses you took?" This is a loaded question. "Looked-down on" is not the kind of phrase that anyone cares to admit is self-descriptive. A person is likely to do so only when these feelings are strongly evident to him. Table 29 presents the responses by sex and curriculum.

Male vocational graduates were most clearly aware of these feelings. A fourth of this group reported feeling looked-down on. Male vocational graduates were also the ones who could most clearly be identified as attending a comprehensive high school or a separate vocational-technical high school. In one of the three cities studied, all of the vocational graduates had attended separate vocational schools. In the second city, all the graduates attended a single comprehensive school. In the third city, the schools had elements of both the separate and the

Table 29. Respondents Who Felt Looked-Down on by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Felt looked down on	25	9	3	14	16	8
Did not	75	91	97	86	84	92
Total	100	100	100	100	100	100
Number	413	275	156	342	451	140

comprehensive schools. That is, some of the classes were held in vocational buildings and some of the vocationally related courses, such as mathematics, were limited to vocational students, but the vocational students shared homerooms and unrelated courses with nonvocational students.

It was not possible to make such a delineation by cities for the female vocational graduates. There was no city where all the vocational graduates attended separate schools. Vocational training for females was conducted in the general high schools as well as in the vocational high schools in both the cities with separate vocational facilities. For this reason the following analysis is limited to males.

The differences in the vocational training arrangements for males in the three cities were used to compare the attitudinal effects of comprehensive versus separate vocational schools. The male graduates of all three curricula were sorted by city. The results are shown in Table 30.

In the two cities where students from the three curricula came in contact with each other, the vocational graduates were much more likely to perceive an atmosphere of condescension towards them. In light of the strong wording of this question, it is possible that many of the other vocational graduates also were aware of these feelings, but not to the degree that they would admit to them.

These results have important implications for the current debate as to the proper type of school setting for vocational education. The emphasis at present is on the construction of area vocational schools. Decisions will have to be made whether students will attend these schools full-time or part-time. Unless there is a significant change in the attitudes in the comprehensive high school, it is very likely that vocational

Table 30. Male Graduates Reporting They Felt Looked-Down on by Type of School and Curriculum

	Separate Vocational			Mixed			Comprehensive		
	Vocational	General	Academic	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%	%	%	%
Felt looked down on	3	7	4	31	16	0	36	7	2
Did not	97	93	96	69	84	100	64	93	98
Total	100	100	100	100	100	100	100	100	100
Number	117	123	72	156	79	36	140	74	48

students who attend area schools part-time will feel like second-class citizens in their regular schools.

The democratic potential of the comprehensive school—giving children from all segments of society a chance to know and appreciate one another—is apparently not being realized. To realize this potential will require a major reorientation in the schools.

The prevailing emphasis in secondary schools is on academic preparation for further education. High schools evaluate themselves by the number of students they send on to post-secondary institutions. In this climate vocational education is seen as an alternative for those students who cannot succeed in the more "demanding" academic curriculum. As long as vocational education is seen in this light, the comprehensive school will never be able to fulfill the claims made for it. Mixing students seems to be sharpening the differences between the curricula and their underlying social bases, rather than minimizing them.

In the city where vocational students attended separate schools they did not report condescension in their schools. How they perceived themselves relative to students in academic high schools was not investigated, but it is doubtful if this comparison would add much more information. Students from different schools who do not come into daily contact with one another would have little opportunity to influence interpersonal attitudes.

Students who attend an area vocational school part-time and an academic "home" or sending school the rest of the time, would seem to run the maximum risk of feeling excluded and "looked-down on." Their chances of feeling a part of either school would be minimized.

The area school would have the maximum appeal to their interests and abilities, but would offer little outlet for their extracurricular interests. Their home school, on the other hand, would offer the academic courses which for these students have the least appeal. Their chances for performing in a manner that leads to acceptance and respect would thus be minimized. Part-time attendance at an area vocational school would seem to be one of the surest ways of causing students to feel inferior in their "home" school.

Another question asked on attitudes towards school experiences was if the graduate felt it was harder to take part in school activities because of the courses he took. "Harder to take part" can be interpreted in two ways. One interpretation is that the graduate felt excluded by other students because he was different from them. The other is that the demands of courses made it difficult to participate. Both of these interpretations appear to have been made because, among the males, the vocational and the academic graduates were more likely than the general curriculum graduates to agree it was harder to take part in school activities. The results are presented in Table 31.

Table 31. Respondents Who Felt it was Harder to Take Part in School Activities by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Harder to take part	23	10	20	15	14	17
Not harder	77	90	80	85	86	83
Total	100	100	100	100	100	100
Number	413	277	156	342	452	139

To test the degree to which the separate factors of exclusion and course demands were associated with the answers, the male graduates were again compared by city. The reasoning was that in a separate vocational school the vocational graduates should not feel excluded. Their answers should only reflect course demand. These results are presented in Table 32.

In all three cities the general curriculum graduates were among those least likely to feel it was harder to take part. In the city with the separate vocational schools the vocational graduates were no more

Table 32. Male Graduates Who Felt it Harder to Take Part in School Activities by Type of School and Curriculum

	Separate Vocational			Mixed			Comprehensive		
	Vocational	General	Academic	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%	%	%	%
It was harder to take part	10	10	17	29	8	31	27	15	15
Not harder	90	90	83	71	92	69	73	85	85
Total	100	100	100	100	100	100	100	100	100
Number	117	123	72	156	79	36	140	74	48

likely than the general curriculum graduates to feel it was harder to take part. Apparently the demands of their courses did not account for their answers. In the other two cities, the percentage of vocational graduates who felt it harder to take part was about three times the percentage in the city with separate vocational schools. These much higher percentages in the cities with at least some of the elements of a comprehensive school suggest that exclusion was most responsible for the vocational students feeling that it was harder to take part.

The third question on attitude towards school did not detect as many differences as the two already discussed. The graduates were asked if they had felt really a part of their school. The responses were very similar for males and females for all three curricula. These responses are shown in Table 33.

Table 33. Respondents Who Felt Really a Part of Their School by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Felt really a part	86	85	86	86	83	92
Did not	14	15	14	14	17	8
Total	100	100	100	100	100	100
Number	411	276	156	342	452	138

To complete the analysis, the male responses to the "really a part" question were sorted and tabulated by city. These results (Table 34) show some differences among the cities and curricula, but there is no consistency in them.

Table 34. Male Graduates Who Felt Really a Part of Their School by Type of School and Curriculum

	Separate Vocational			Mixed			Comprehensive		
	Vocational	General	Academic	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%	%	%	%
Felt really a part	93	83	85	78	86	86	86	85	83
Did not	7	17	15	22	14	14	14	15	17
Total	100	100	100	100	100	100	100	100	100
Number	117	123	72	156	79	36	140	74	48

In general it can be said that for two of the three questions concerning the graduates' perception of the attitudes of others, the results for vocational graduates were not favorable. Vocational graduates who attended schools with some comprehensive aspects were more likely to feel looked down on and excluded from activities than graduates of the other curricula. This was not true to the same extent, of vocational graduates who had attended separate vocational schools. The implications of these findings for new area vocational schools which are being constructed in Pennsylvania and other states should be clear. Unless special efforts are undertaken to counteract such attitudes, students who attend such schools on a part-time basis may think of themselves as being second-class citizens in their home school.

The attitudes of condescension, of which many vocational graduates were aware, apparently did not affect their satisfaction with the efforts their schools made to prepare them for jobs. Almost nine out of ten vocational graduates approved of the efforts. About the same ratio said they felt they were really a part of their school. There seems to be some contradiction between feeling looked down on and excluded from activities and yet feeling a part of your school. This contradiction, however, was not apparent to the respondents, for the vocational graduates felt as much a part of the school as the graduates of other curricula.

III: PROBLEMS OF SPECIAL GROUPS

In the course of the study of vocational education in particular, and education in general, two groups stand out as having particular problems—girls and Negroes. In each instance, it is quite evident that the needs of the two groups are not being satisfactorily served. The factors involved differ for each of these groups, and they are discussed separately.

Girls in Vocational Education

In recent years the differential vocational experiences of special worker groups have been receiving increased attention. Women represent a group with problems unique to themselves. In the past it was assumed that women workers would be in the labor force for only a short time—after school and before marriage. Modern women are no longer precluded from participating in the labor force by marriage and by the rearing of children. The hours of drudgery that were previously necessary to manage a home have been greatly reduced through the introduction of many labor saving devices for the housewife. Today the homemaker has the time both to hold outside employment and to maintain a family. Thus, the old argument that training given to young girls is largely wasted has less weight today than at any time in the past.

But realization is, unfortunately, distinct from implementation. In the light of this trend, how adequately are young women being trained in preparation for their employment experience? There is a cultural lag in matters such as this. However, the role of women in the labor force has been changing so rapidly, especially since the end of World War II, that it would seem that our educational institutions would begin to adapt to this new reality.

The data that are used to explore this question are presented in other chapters and in other sections of this chapter. In this section the implications of these data for young girls are emphasized. The major conclusion from these data is that there are a limited number of vocational offerings open to young girls in the three Pennsylvania cities. These offerings reflect the roles that our society deems "suitable" for females. If a young girl does not plan to go on to college, she has been subtly trained to expect only a short period of employment before she assumes her proper role as wife and mother.

Usually there are only a few types of jobs that young girls anticipate holding during this period. The most acceptable, and hence the most frequently chosen, are office occupations. The distributions of the jobs young girls planned to obtain after graduation and the first jobs they actually obtained are shown in Table 35.

Table 35. Occupation Distribution of Type of Jobs Females Wanted and Obtained by Curriculum

	Vocational		General		Academic	
	Wanted	Obtained	Wanted	Obtained	Wanted	Obtained
	%[a]	%	%[a]	%	%[a]	%
White Collar	90	80	87	75	92	70
Professional, technical, managerial, and kindred	10	4	9	4	67	14
Clerical and kindred	78	70	77	61	22	49
Sales and kindred	2	6	1	10	3	7
Service	6	7	8	6	6	11
Manufacturing and Processing	4	13	5	19	2	19
Specific skills[b]	2	5	1	3	1	3
Nonspecifc skills	2	8	4	16	1	16
Total	100	100	100	100	100	100
Number	316	309	386	401	78	118

[a] Includes only those who reported specific plans.

[b] For a list of occupations classified as specific skills see Appendix.

Table 35 shows that more than two out of three of the girls from the vocational and general curricula in the three cities planned to obtain clerical jobs, and almost this proportion actually did so. Girls from the academic curriculum had other plans, but one out of every two of these graduates also obtained clerical jobs.

A clerical job or other office work is certainly the goal of most girls who do not plan to go to college, and it becomes their actual attainment. Except for those from the academic curriculum, a majority of the female respondents reported that they chose their courses to prepare for these jobs. Table 36 presents their retrospective reasons.

Table 36. Most Frequently Mentioned Reasons for Choosing High School Courses by Curriculum - Females Only

	Vocational	General	Academic
	%	%	%
Reasons			
Prepare for a job	56	56	8
Prepare for future—unspecified	12	12	10
Interest in subjects	13	12	7
Prepare for post-secondary education	3	6	59
Number	342	450	140

The reason "prepare for a job" was given by about half of the females from the vocational and general curricula. Only about a quarter of the males from these curricula gave the same answer. Since it is young men who are supposed to be concerned about employment, this result is surprising. A clue to its explanation can be found in the low percentage of females who chose the curriculum because of an interest in the subjects. The percentage of female vocational graduates selecting a curriculum because of interest was only about one-fourth of the percentage of males. This probably reflects the limited vocational offerings available to girls. Boys can choose from a variety of trade, industrial, and technical courses, as well as the commercial and distributive offerings to which girls are commonly limited. The data on this point were presented in Chapters 2 and 3.

The narrow vocational role set for young girls, and the resulting small number of vocational course offerings, might be expected to stifle aspiration and cause dissatisfaction. In the three cities, young women apparently were being denied the opportunities for self-expression and self-realization that were at least offered to some young men. The female respondents, however, did not seem more dissatisfied than the males. In fact, on most questions on attitudes towards their school experiences the girls were more positive.

The replies to the question as to whether the girls thought their school had prepared them to get a job are shown in Table 37. In the academic and vocational curricula the percentages are very similar to those of the males. In the general curriculum the percentage of females who gave a favorable answer is 12 percentage points higher than the male figure. As seen by its students, the general curriculum apparently offers better occupational preparation to females.

Table 37. Females' Attitudes Towards Their Schools' Efforts to Prepare Them for Jobs by Curriculum

	Vocational	General	Academic
	%	%	%
School did prepare	84	82	61
School did not	15	18	36
No answer	1	0	3
Total	100	100	100
Number	337	450	133

The three questions on the degree to which the females felt accepted in their schools are summarized in Table 38. There was some tendency for the girls from the vocational and general curricula to feel a little less accepted than the academic girls. These differences, however, were not nearly as large as the differences among the males. As was mentioned previously, because the females in office occupations in the three cities received vocational training in general high schools, it was not possible to compare these answers by type of school attended. The small differences among the curricula make it unlikely that such a comparison would be fruitful.

Table 38. Summary of Three Questions on How Accepted Females Felt in Their Schools

	Vocational	General	Academic
	%	%	%
Felt looked down on	14	16	8
Felt harder to take part in school activities	15	14	17
Did not feel really a part of their school	14	17	8
Number	342	452	139

On almost all the indices of school experience the female graduates in the three cities appear as satisfied as or more satisfied than the males. These positive attitudes are held despite the cultural stereotype of the appropriate vocational role for females in our society which limits the vocational courses open to them. This apparent paradox can be resolved if one assumes that most young girls have accepted the cultural stereotypes. They apparently feel that there are only a few types of jobs appropriate for them and they are content to prepare themselves for these jobs.

Negroes in Vocational Education

The major domestic problem facing our nation is one of finding ways of helping those who come from disadvantaged backgrounds to take a more active part in its economic life. The solutions to this problem are fraught with difficulties. One solution frequently proposed is to give salable skills to the disadvantaged through vocational training. Many educators fear that if large numbers of disadvantaged are taken into vocational programs the already shaky image of these programs will deteriorate still further. In addition, vocational education traditionally has not been organized to serve those with less than average ability. The typical vocational course requires average or above average skills in reading and computation, as well as in the technical areas and, as a rule, students (both Negro and white) from disadvantaged homes lack these skills.

In addition, youth from a poverty culture often exhibit a set of values and a life style which make it difficult for them to adjust to the requirements of the middle-class orientation of the school environment. Their behavior, in turn, is often difficult for the teachers and administrators to understand and accept. The initial handicap with which they enter school is not overcome by their actual school experiences. Instead they fall more and more behind their more fortunate classmates. Eventually, unable to do the required work, they leave school to join the ranks of the unemployed or the marginally employed.

These problems are not limited to Negroes, but proportionally they bear on them much more heavily. Whatever criterion of poverty is used, the proportion of Negroes who fit this category is usually double or more the proportion of whites.

There was an insufficient number of Negro graduates in the sample and, therefore, an analysis of their employment experiences in detail is not possible. Table 39 shows the percentage of Negro graduates in the sample in each curriculum, by sex.

Table 39. Racial Composition of Curricula by Sex

	Males			Females			
	Vocational	General	Academic	Vocational	General	Academic	Total
	%	%	%	%	%	%	%
White	93	86	95	91	97	94	93
Negro	7	14	5	9	3	6	7
Total	100	100	100	100	100	100	100
Number	412	275	154	341	451	140	1773

In Table 39 only the males in the general curriculum had a significant percentage of Negroes. The 14 per cent in this curriculum represents 39 respondents. Thirty-four of these 39 were from the trade preparatory curriculum in the large city, which is discussed briefly in Chapter 2. Almost all of the other Negro respondents (89 per cent) were also from the large city.

Negro respondents made up 18 per cent of the large city sample. This figure under-represents the percentage of Negro graduates during the years 1960 to 1964. During this period Negroes comprised approximately one-fourth to one-third of the large city graduates. The method of selecting the respondents, mainly through their employers, seems to have resulted in less than a normal number of Negroes.

This lower representation could have been due to either the type of employers who agreed to participate in the study or the lower labor force participation by Negroes. If the lower percentage of Negroes was due to the type of employers, it would suggest that those who did not participate in the study tended to hire more Negroes than those firms that did participate. The firms that participated were the larger, more progressive ones. So either interpretation of the under-representation of Negroes suggests that they face discrimination in the labor market. Either they are not obtaining jobs, or they are more likely to be hired by the less progressive firms. As a result the Negro respondents who were included in the sample tended to be from the more progressive firms. These respondents thus had had favorable labor market experiences. The Negro graduates which the study did not reach would, in all likelihood, have had more negative experiences.

It is also reasonable to postulate that the Negroes who were interviewed were the ones with the most individual ability. Given the discrimination that Negroes face in the labor market, it is only those who have the most to offer to employers who will be hired. These would be the ones most likely to be placed by their schools. They would also be the ones with the personal initiative which is necessary if one is to find employment despite discrimination.

Though the evidence presented in other sections of the report does not show Negroes at a disadvantage, this is probably a consequence of the type of Negroes who were available to be interviewed.

IV: SUMMARY AND CONCLUSIONS

The evidence presented in this chapter, based on data collected in three cities, indicates that, to a considerable extent, the choice of a high school curriculum is determined by factors beyond the control of the individual. The major factors, which can be identified, are determined at the moment of birth. They include sex, IQ, and the social and economic condition of the family into which the individual is born. If an individual happens to be born with a relatively high IQ and in a relatively well to do family, it is highly likely that he, or she, will select the academic curriculum to prepare to go on to college. If the individual is not so fortunate—has a lower IQ and is from a less privileged family—curriculum choice will be more influenced by sex and job considerations. If the individual is male, he will probably select a vocational program. If the individual is female, she will probably select the general business curriculum. There are no characteristics that identify the individual who selects the general (as distinguished from the general business) curriculum. This curriculum lacks a separate identity and is a potpourri of academic and industrial arts courses. The students in this curriculum also lack distinctive traits and reflect a varied mixture of interests, abilities, and backgrounds.

The consequences of a curriculum choice are reflected in the retrospective attitudes of the graduates towards their preparation. Almost nine out of ten vocational graduates thought that their schools had made a real effort to prepare them for employment. This is, of course, a very encouraging figure, but it must be evaluated in light of the six out of ten academic graduates who also felt that their schools had prepared them for employment. The difference between the occupational utility of academic and vocational preparation, as seen by the graduates of these curricula, is thus an absolute difference of 30 percentage points.

Another consequence or concomitant of curriculum choice is the way the student feels he was treated in his school. In the comprehensive schools about one-third of the male vocational graduates admitted that they felt "looked-down on" and were excluded from activities in their schools. These feelings were not nearly so prevalent among the vocational graduates who attended a separate vocational school. The crucial variable seems to be whether the students come into daily contact with nonvocational students. If they do, the vocational students are much more likely to consider themselves as being in a second-class status.

The implications of these findings for area vocational schools, a type of school being strongly supported in Pennsylvania, should be obvious. Most area schools in the state are being designed to serve a number of "sending" schools. The students will attend the area school on a part-time basis. This arrangement seems to be the one most likely to cause vocational students to feel excluded in their home schools. Significant numbers of vocational students in comprehensive schools feel "looked-down on." Is not a student who takes his vocational training at a separate location even more likely to feel like an "outsider"—a marginal person with no real roots in either school? Although the decision to construct these schools may be irrevocable, it is essential that school administrators recognize this problem and develop ways and means to minimize the impact on the students.

Girls who selected the vocational curriculum were generally quite satisfied with their preparation and the way they were treated in school. They expressed these positive attitudes despite obvious cultural limitations on their vocational aspirations. About two out of three girls who did not intend to go on to college planned for and obtained clerical jobs. Office occupations were the only vocational programs capable of accepting a significant number of young girls. But the girls were not unhappy because of these limitations. They have probably been subtly trained from a very young age that there are only certain jobs appropriate for young girls, and that women should put their vocational plans second to their proper roles as wives and mothers.

The Negroes who were included in this study did not seem to have experienced any discrimination in their school or employment experiences. Their under-representation in the sample, however, cautions against any optimistic conclusion. Almost all the Negro respondents were from the large city, for this was the only one of three cities where they comprised a sizeable proportion of the population. But even in this city the sample did not reflect the actual proportion of Negro high school graduates.

It seems very likely that the Negroes who were interviewed were the more successful ones. These were the ones who had the personal characteristics that are necessary if one is to obtain a job despite discrimination. They were employed by the larger, more progressive employers who agreed to participate in the study.

The under-representation of Negroes suggests either that they were not employed or they were employed by the more marginal businesses which would not participate in this study. Either interpretation of this under-representation suggests that Negroes do face labor market discrimination.

6

GUIDANCE AND COUNSELING

Introduction

The choice of a high school curriculum is the first major decision in the vocational development of an individual. Many of the personal and environmental factors that influence this decision have been discussed in Section I of the previous chapter. It was found that these factors, over which the individual has no control, have considerable influence on a curriculum choice. It was also found that young girls were proscribed in their vocational decision by the limited number of occupations deemed "suitable." And, finally, it was found that Negroes were over-represented in the general curriculum and under-represented in the academic and vocational curricula. All of these findings tend to emphasize the importance of guidance and counseling.

Guidance and counseling (not necessarily as carried on currently) derive their importance because, alone among the many factors that influence career decisions, they offer substantial opportunities for manipulation. The word "manipulation" is an anathema to counselors but it is used here in the sense of "capable of being altered." Although the main factors that determine vocational development—sex, family background, individual ability, etc.—cannot be changed, the amount and quality of the vocational guidance which a young person receives at school can be altered or improved.

Guidance has the potential to expose young people to a wide range of possible occupations. It can provide a unique setting where an individual is assisted to explore his own interests and goals rather than those that others believe he should have. The setting can in this way assist the individual to realize his own potential.

I: AN EVALUATION OF GUIDANCE PRACTICES IN THE SCHOOL

The General Weaknesses

Unfortunately, the reality of counseling in most high schools is far from the model described above. Many weaknesses of guidance were found by the evaluation team. These included unrealistically large student-counselor ratios, inadequate facilities, poor student records, limited use of aptitude and interest tests, etc. In the discussions of the strengths and weaknesses of the separate vocational programs in Chapter 4, it was noted that guidance, placement, and follow-up received the lowest ratings. In addition to these program ratings, a specialist in guidance looked at the guidance function itself, not in the context of the separate programs. His observations were equally critical.

The two major weaknesses, found in each of the three school systems studied, were the poor preparation of the counselors in vocational areas and the high student-counselor ratios. The counselors generally had sufficient preparation in guidance and counseling techniques but lacked the special preparation necessary for vocational counseling. They were primarily oriented towards the college-bound students in the academic curriculum. They showed little understanding of the ways in which the interests and abilities of the nonacademic students were incompatible with the prevailing orientation of their schools. Nor were they familiar with the range of occupations available to noncollege youth.

The small city, at the time it was visited, provided an example of a token guidance program—one that was in existence but had no real support. There were about 900 students to each counselor. Guidance for boys and girls was separated with different counselors and facilities. The physical facilities for both were woefully inadequate. To quote the evaluator: "One cannot justify in any way the severe lack of facilities both for boys' and girls' guidance." There was confusion on the part of the teachers as to the proper function of guidance. Some confused it with discipline. The director of the vocational-technical program performed most vocational guidance and also conducted follow-up of the vocational graduates.

Fortunately, since the time of the evaluation, considerable progress has been made.[1] Services for boys and girls are no longer separated. A new physical facility has been set up and equipped with new furnishings. It is now the most attractive student service area in the entire school. Counseling rooms, offering complete privacy, have been constructed. Occupational information is easily available and space is provided for browsing. A full-time vocational counselor has been added. The student-counselor ratio has been lowered to half its previous proportion (it is now 450 to 1). In-service training is being conducted.

Despite these laudable improvements, questions can still be raised concerning the counseling the nonacademic students are receiving. The student-counselor ratio remains unrealistically high and most of the counselors still seem primarily oriented towards the academic students.

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[1] Personal communication, Director of Guidance for the system studied.

Nevertheless a beginning has been made. To advance beyond this point will require a continuation of the leadership which brought about the present improvements.

All such changes require the full support of the school administration. In this system much of the impetus was provided by a new superintendent who was not willing to accept the "way things had always been done." This kind of leadership must be continued if this school which ". . . more nearly approaches the goal of a comprehensive high school than many others which make such a claim,"[2] is to achieve this goal in reality.

Counseling Minority Groups

The large city in Pennsylvania was not visited by the expert in vocational guidance but some of the observations he made in other large cities he visited are relevant. He noted, in these other cities, a vast influx of minority, primarily Negro, groups. These people have been limited to certain geographic areas in the city. The schools in these ghetto areas are as effectively segregated as any southern state.

Young people growing up in these ghettos receive a limited view of life and of the occupations appropriate to minority groups. They are rarely encouraged by their guidance counselors to attend the vocational-technical schools that are outside the ghetto neighborhoods or to prepare for nontraditional occupations.

The large cities have all the other guidance problems discussed above and, in addition to these, they must attempt to serve minority populations which in many systems are becoming the majority of the school population. A counselor cannot be expected to motivate minority youth to train for nontraditional occupations when he has little time to talk with them, when he has inadequate facilities to meet with them, and when he has limited information about possible occupations himself.

Two other recent studies of counseling services in the large city included in this study tend to confirm these observations.[3] One of the studies stresses that the counselors are ". . . able, well-trained, dedicated, and doing conscientious work within the limits of existing policies, programs, and resources." These limits, however, are quite formidable. One, for example, is an average load of 600 students per counselor. The other study outlines a plan for career development which begins in the elementary schools and continues throughout the individual's life. It states: "The concept of terminal education must be discarded. Children must learn that lifetime continuing education is prerequisite to success in any career today, and will become even more necessary in tomorrow's labor market."

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[2] Comment of the counseling specialist on the evaluation team.

[3] These studies are not cited in order to preserve the anonymity of the city involved.

The Roots of the Problem

The second report referred to above has been heavily influenced by the changing racial composition of the school population. The recommendations contained in it are based on the finding that many youth from disadvantaged backgrounds lack certain necessary attitudes and approaches to their vocational careers. The attitudes they are lacking are the prevailing middle-class orientation to the role of a vocation in one's life. Work in this perspective is seen as the main way in which a person finds an identity in modern society. An individual is expected to select, in a rational manner, a type of work which he finds satisfaction in doing. This work is expected to provide self-expression and self-fulfillment through personal achievement and to yield individual advancement and financial success.

In reality, only a small proportion of the labor force has ever experienced vocational careers that follow this pattern. Nevertheless, this has been the American goal—a society in which each person has the opportunity to achieve all that he is personally capable of achieving. Middle-class and working-class children have been taught this goal in their families through the socialization process that makes them acceptable members of American society.

In our large cities in recent years, however, the influx of minority groups has developed a subculture of poverty. These are not the children of the immigrants who came to the United States to try to improve their lives and the lives of their children. Instead, they are primarily Negroes who have migrated from the rural South. They too are hoping for a better life, but the cruel consequences of centuries of slavery and second-class citizenship are formidable obstacles to overcome.

Throughout our history the schools have been given the main responsibility for helping immigrants to become American citizens. Now the schools of our large cities are being asked to help the children of poverty to assume productive places in our society. As they have in the past, the schools will have to adapt again. To make this adjustment they must recognize that children from disadvantaged backgrounds do not enter school with the same values and life styles as children from more fortunate circumstances.

Youngsters who have been brought up in the poverty ghettos typically enter school with less preparation for learning. They have had limited exposure to the printed word and even to the spoken word—at least, the way it is spoken in the school. They have received less training in controlling their impulses and postponing immediate gratification for a larger, delayed payoff.

This inadequate preparation puts the child at an immediate disadvantage. This disadvantage accumulates throughout his school experiences. The expectations of failure and rejection he has acquired from his culture are amply verified by his experiences in school. School is a negative experience where he is constantly reminded of his personal inadequacy and incompatibility with the larger society which the school represents.

When he leaves school, he is poorly prepared for the requirements of most jobs. Because as a child he often lacked a stable vocational role model—a parent who worked steadily and gave highest priority to his work—he, himself, often lacks certain employability traits. These are such traits as regular attendance, punctuality, willingness to accept supervision, etc. These handicaps, plus the fact that he is a Negro, put him at a tremendous disadvantage in the labor market. He is traditionally the last-hired, first-fired. He obtains marginal jobs at low pay.

The yearly summer turmoil in our large cities indicates that Negro youth are no longer willing to accept this state of affairs. The promises that our Nation has made must be kept. Negroes must be given the opportunity to obtain their share of the prosperity our society offers to others.

How an Expanded Concept of Guidance Can Help

This rather extensive digression has been designed to provide the rationale for a broader concept of counseling and guidance. For guidance to be effective with minority youth, it must go considerably beyond a yearly meeting between the student and the counselor at which time they select the student's courses for the next year. Instead guidance should begin in the elementary school where students are made aware of different occupations. As students progress through school, they should be given training in decision making and deciding among alternatives. Part of this training should acquaint them with the necessity of deciding among various possible career plans. Above all, the school should attempt to develop the attitudes in the students that they can, within limits, control their vocational lives—that they can make plans and carry them through to completion.

None of the foregoing should be interpreted to mean the student should be pressed to make an early vocational choice. Quite the reverse is intended. There is considerable evidence that vocational decisions made in the high school years are quite tentative.[4] Yet while the specific choice is tentative, the general area of interest is rather stable. Students should thus be encouraged to explore their interests and to consider various alternatives along continuums of ability and preparation required. These requirements can then be related to the individual's own circumstances and plans can be made that fit these circumstances while permitting the maximum number of options.

Such a plan for counseling should, of course, be tied in with a curriculum that encourages rather than penalizes exploration. And, equally obviously, the counselors who work with minority youth must be sympathetic to their particular characteristics and problems.

This expanded role for guidance would be helpful to all young people, but it is children from the subculture of poverty who need it most. If they are to learn the rules of the "middle-class game" and if they are to break out of the self-perpetuating problems of poverty that have trapped their parents, special efforts are needed. It is not enough to offer "equal opportunities to all" because not all people are able to take advantage of these opportunities. Special efforts are needed for those with special problems to make these opportunities truly viable to them.

II: THE EVALUATION OF GUIDANCE BY THE GRADUATES

From the on-site evaluation of vocational education it appeared unlikely that guidance activities would be found to have had any major influence on the graduates. This impression was confirmed by the interviews of the graduates. Both types of evaluation point to the same conclusions: The guidance which was given was generally good but too few students were being served, and guidance on course choices was more successful than guidance on job plans.

The students were asked if they ever discussed their course choices and their job plans with guidance counselors. Although this is an objective question, the results can more accurately be considered attitudinal. There was a considerable lapse of time between high school and the time of the interview—a minimum of one year. This period afforded considerable opportunity for errors of memory to distort the respondents' recall of these events. It is reasonable to assume, however, that there would be some recall and that any distortion would be in the direction of the respondents' attitudes toward the guidance they received. That is, respondents who felt most strongly about their experiences by a counselor would be more likely to recall them. Either way these questions are interpreted as objective measures or reflections of attitudes, guidance, as viewed by the vocational graduates, comes off poorly.

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[4] Flanagan, J. C., and Cooley, W. W., *Project Talent: One-year Follow-up Studies.* School of Education, University of Pittsburgh, 1966.

Guidance on Course Choices

The answers to the question, "Did you ever discuss your course choices with a guidance counselor?" are shown in Table 40. The respondents who reported they had discussed their courses were asked how helpful they thought these discussions had been. Their answers were recorded and rated as helpful or not helpful.

Table 40. Guidance on Course Choice by Sex and Curriculum

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Guidance helpful	36	36	46	35	44	51
Guidance not helpful	9	16	20	14	20	19
No guidance	55	48	34	51	36	30
Total	100	100	100	100	100	100
Number	412	277	156	342	451	140

The vocational curriculum is usually the most limiting in terms of the post-high school options open to its students. This curriculum gives its students an employable skill, but often it does not include the prerequisites necessary for post-secondary training. One would hope that these considerations would be pointed out to a student who selects the vocational curriculum. But such was not the case. The vocational graduates were the least likely to have received guidance. Among the graduates who reported discussing their choices, however, those from the vocational curriculum were the most likely to say the guidance had been helpful.

The irony of the situation is obvious. Vocational students had the greatest need for guidance and, if they received it, they were the most likely to report it helped them, yet they had the least exposure.

Guidance on Job Plans

The pattern found for guidance on course choice was similar to that found for guidance on job plans, as is shown in Table 41.

Table 41. Guidance on Job Plans by Sex and Curriculum

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Guidance helpful	14	14	12	19	18	25
Guidance not helpful	6	11	10	9	12	12
No guidance	80	75	78	72	70	63
Total	100	100	100	100	100	100
Number	410	277	156	340	449	139

The results in Table 41 indicate that, as the students recall it, only about one-fourth had discussed their job plans with a counselor. And all of these students entered the labor market after graduation. The implications of this for the vocational student have already been mentioned, but it does not appear that students from the other curricula were well served either.

The general curriculum graduates who received guidance were the least satisfied with it. This held for guidance on both course choices and job plans. There is a temptation to jump to the conclusion that being guided into the general curriculum results in greater dissatisfaction with guidance. Although this appears to be a reasonable interpretation, the data cannot confirm or deny it. This table only shows the relationship, not the cause of it.

The majority of the academic graduates stated that they selected this curriculum to prepare for post-secondary education, and more of them received guidance in these choices. Since almost all these graduates entered the labor market, the effectiveness of this guidance is questionable. A guidance counselor cannot be expected to foresee the future for his students, but he should be able to help them to assess their plans realistically. Comparing the plans of the academic graduates with their subsequent experiences, it does not appear that these plans were very realistic.

Guidance for Groups with Special Problems

The limited number of vocational offerings available to females (see Chapters 4 and 5) should have made counseling them more difficult. A counselor would be hampered in assisting a girl, with atypical vocational interests, to select courses matching these interests. Tables 40 and 41 show the actual percentages that received guidance on course choices and job plans. These tables also show the actual percentages that evaluated the guidance as being "helpful" or "not helpful." Table 42 presents these evaluations in a different manner. This table is limited to those who received guidance. It presents only the percentages of males and females who evaluated their course guidance and job counseling as "not helpful." The remainders, which are not shown, are the percentages who considered it helpful.

Table 42. Respondents Who Received Guidance on Course Choices and Job Plans and Who Evaluated the Guidance as "Not Helpful" by Sex and Curricula

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Guidance not helpful						
Course Guidance	20	31	30	29	32	28
Number	(186)	(145)	(103)	(168)	(288)	(98)
Job Guidance	29	44	45	31	39	33
Number	(82)	(68)	(33)	(95)	(135)	(52)

These percentages, it bears repeating, are based only on those who reported they received guidance. One cannot evaluate something he does not recall experiencing. Among those who made evaluations a few consistent differences did appear. The respondents were more satisfied with course guidance than with job guidance. Regarding course counseling the male graduates of the vocational curriculum were more satisfied than the other sex-curriculum groups which were quite similar. This suggests that the limited offerings available to the other groups, including the vocational female, affected their evaluations.

The difference between the male and female vocational graduates in their evaluations of job guidance was not as marked. The vocational graduates seemed to be a little more satisfied than the graduates of the other curricula. This was more true of the males.

In general, it does not appear that the female graduates were more poorly served by their counselors. They had more exposure to guidance than males did and, with one exception, were as satisfied with the results. That exception was the evaluation of course guidance by female vocational graduates. This supports the contention that young girls are being restricted by the vocational offerings available to them.

There were insufficient Negroes in the sample to analyze in detail their evaluations of counseling. Those who were interviewed appeared to have had about the same experiences and reactions as the white respondents. Once again the selective factor in the Negro sample makes these results somewhat suspect. The successful Negroes, the ones included in the sample, are more likely to have favorable attitudes toward their school experiences.

III: SUMMARY AND CONCLUSIONS

It was shown in Chapter 5 that curriculum choice is in large part determined by factors beyond the control of the individual. The inter-generation transfer of these factors tends to cause young people to follow occupations that are similar to those of their parents. The guidance service which children receive in school is one of the few organized attempts to acquaint youngsters with wider occupational opportunities.

Unfortunately, the handicaps under which guidance operates in most schools, including the three systems in this study, limit severely its effectiveness. The two major handicaps were unrealistically large student-counselor ratios and counselors who were inadequately prepared to provide vocational guidance.

The interviews of the graduates confirmed these in-school evaluations. In the total sample, 39 per cent of the graduates reported discussing their course choices and 27 per cent reported discussing their job plans. The majority of the respondents did not recall being reached by the counselors. And, it was the vocational graduates who were least likely to have received guidance. Those who recalled receiving guidance were generally satisfied with it. But they were less satisfied with its helpfulness in their job plans than they were with its helpfulness in their course choices.

The conclusion from both sets of data is that the counselors are generally doing a good job with those students they can reach. However, they are not reaching many of the students and they are less qualified to give vocational guidance than course guidance.

In the large cities of our Nation guidance faces a special task. Many of the youngsters from disadvantaged backgrounds enter school without the basic orientations that have always been assumed in the past. This change is due to the large inflow of rural southern Negroes into the large cities and the simultaneous outflow of the whites from urban centers to suburban areas.

Our Nation is asking the schools to give these students the training in vocational values and work habits that have previously been given in the home. Whether or not the schools can perform this function is uncertain. One thing is certain—they will not be able to do it with the methods and techniques that have been used in the past. A much more comprehensive concept of guidance is necessary. It is one which begins in the elementary years and continues throughout the school experience. It is one which attempts to enhance the vocational development of the youngster by providing broader occupational knowledge, training in decision-making, and opportunities for exploration, while maintaining the maximum number of options for the future.

7

EMPLOYMENT EXPERIENCES OF GRADUATES

Chapter 5 examined the attitudes of graduates from the three cities towards their school experiences. While these are important variables, most vocational educators would consider the actual employment experiences to be more meaningful indicators of their activities. Many of the attitudinal variables are reflections of values in our society and, to a large degree, are beyond the immediate control of the educators. The vocational courses, however, are directly under their control. Measures of the employment experiences of the students who graduated from these courses should reflect the value of the courses and can assist educators in the development of a more effective curriculum.

This chapter discusses several measures of vocational experiences. The first job is emphasized for, in many ways, it provides the clearest measure of the immediate effects of the preparation provided by the school. In later jobs it becomes more difficult to distinguish between the effects of high school training and the effects of post-high school work experiences.

The first job variables discussed in Section I of this chapter include: types of jobs obtained, how these were obtained, job-training relatedness, ratings of preparation, ratings of satisfaction, starting pay, and reasons for leaving first job. The differences among the curricula on most of these measures were not sizeable. There were some differences in the types of jobs obtained, how these were obtained and the respondents' ratings of their preparation. Vocational males were more likely to have obtained manufacturing and processing jobs that required specific skills. Vocational females were more likely to have obtained clerical jobs. More vocational graduates of both sexes obtained their first jobs with the help of their schools. And vocational graduates were more satisfied with the preparation they received in school.

These differences were large enough to be significant. But considering the differences in the preparation of graduates from the three curricula, they were smaller than might have been expected. Starting pay and job satisfaction revealed no consistent curriculum differences.

It was not possible, of course, to make inter-curriculum comparisons on job-training relatedness, but the data for the male vocational graduates should be of interest to vocational educators. Overall, using a liberal definition of relatedness, the percentage of technical and trade and industrial graduates who obtained related jobs was about 50 per cent. In other words, more than half of the vocationally trained boys obtained jobs unrelated to their training. The percentage of vocational girls who obtained related jobs was much higher—75 per cent—reflecting in large measure the predominance of training in office occupations and the demand for these skills.

While first job information provides the least contaminated evaluation of the immediate payoff of high school training, it is certainly not the sole criterion. Vocational educators never claim that their graduates are finished workmen. All they claim is that their graduates are advanced learners. As advanced learners, the results of their training may not necessarily be revealed in their first jobs. Hence an analysis of all of their employment experiences is in order.

Section II of the chapter presents three indices of employment experiences which are based on all of the jobs the respondents held, not simply their first jobs. The sample for this study includes graduates from the years 1960 through 1964. Thus, when the interviewing was conducted in 1965, some respondents had been in the labor force for five years while others were in the labor force for only one year. These different time periods were made comparable by reducing the measures to common bases.

One index used in this section is the per cent of time employed, that is, the ratio of time employed to time available for employment. Graduates of the vocational and general business curricula were employed significantly more than graduates of the academic and general curricula.

A second index used is earnings progression. This indicates how much a person's earnings have progressed over the period during which he has been employed. Vocational graduates improved significantly more than those of any of the other curricula, and, it will be recalled, they started at the same level.[1]

The third index is the average monthly earnings—total earnings divided by months available for employment. On this index, too, vocationally prepared graduates did significantly better than the others. These three indices were evaluated by multiple regression techniques.

All three indices of total employment experience point to a payoff for vocational education. The results suggest, however, that this payoff is increased when there is some relationship between training and the types of jobs obtained. This finding, together with the fairly low percentage of males who obtained related employment, have obvious implications for future plans for vocational education. If increased payoff is dependent on obtaining training-related employment and if less than half of the male vocational graduates obtain such employment, is it wise to expand training along specific skill lines? This question is discussed in Section IV.

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[1] This finding must be regarded as tentative. Another study, being conducted at the Institute for Research on Human Resources, indicates the reverse: the vocational graduates initially earned more but the difference disappeared over the period of the respondents' employment. Some possible reasons for the differing results are discussed in the Technical Note to Appendix B.

To speak of any payoff of vocational training without referring to the costs of this training would be unsound. It is not enough to say vocational graduates make more money than graduates of the other curricula. The extra costs of training vocational students must be compared to the amount of their extra earnings. Fortunately some cost data were available. These data were limited to one graduating class in one city. Only 65 of the graduates of this class were interviewed. Despite the limitations, the results indicate that vocational education is a worthwhile investment. Section III discusses these results.

The final section of the chapter contains the summary and conclusions which interrelate the results presented in the other three sections.

I: THE FIRST JOB

First Job: Plans and Realities

Students who do not expect to go on to college would be well-advised to have some occupational goals, either specific or general, in mind during their high school years. Such goals can give direction to their school experiences and can guide their choice of courses. The data in Table 43 indicate that vocational students were much more likely to have such plans. The information on the job plans shown in this table was obtained at the time of the interviews, after the respondents had left high school. They represent, in other words, the respondents' recall of what their plans had been.

The vocational students reported themselves as having been most definite. The academic students, as would be expected, had the least definite plans. In Chapter 5 it was shown that about three-fourths of these students had planned to go on to post-secondary education.

What is the congruence between these plans and the actual experiences of the graduates? Table 44 compares the expectations and actual experiences of the vocational graduates. It is limited to the vocational graduates for they reported themselves to have been most definite in

Table 43. Distribution of Types of Jobs Respondents Expected to Obtain After Graduation by Sex and Curriculum

	Males			Females		
	Vocational	General	Academic	Vocational	General	Academic
	%[a]	%[a]	%[a]	%[a]	%[a]	%[a]
White Collar	39	56	73	90	87	92
Professional, technical, managerial, and kindred	30	33	61	10	9	67
Clerical and kindred	7	21	11	78	77	22
Sales and kindred	2	2	1	2	1	3
Service[b]	4	8	7	6	8	6
Manufacturing and Processing	57	36	19	4	5	2
Specific skills[c]	55	32	12	2	1	1
Non-specific skills	2	4	7	2	4	1
Total	100	100	99	100	100	100
Number	349	193	70	316	386	78
% total sample undecided	15%	30%	55%	7%	15%	43%

[a] Includes only those who reported specific plans.

[b] Includes military service.

[c] For a list of occupations classified as specific skills see Appendix C.

Table 44. Distribution of Actual First Jobs Compared with Distribution of Jobs Respondents Expected to Obtain by Sex

Vocational Graduates Only

	Males		Females	
	Expected	Actual	Expected	Actual
	%[a]	%	%[a]	%
White Collar	39	38	90	80
Professional, technical, managerial, and kindred	30	17	10	4
Clerical and kindred	7	17	78	70
Sales and kindred	2	4	2	6
Service	1	5	6	7
Manufacturing and Processing	60	57	4	13
Specific skill[b]	55	21	2	5
Non-specific skill	5	31	2	8
Apprentice	[c]	5	—	—
Total	100	100	100	100
Number	349	370	316	309
% total sample undecided	15%		7%	

[a] Includes only those who reported specific plans.

[b] For list of occupations classified as specific skills see Appendix C.

[c] Included in specific skills.

their plans. Since entrance into the labor force on a full-time basis often involves a period of search during which the relationships among interests, abilities, training, and job tasks may be quite tenuous, the following definition of a full-time job was chosen: a job held at least three consecutive months in which a graduate was employed 30 hours or more a week. All the actual jobs listed in Table 44 were consistent with this definition.

There is much similarity between the two distributions in Table 44. Two-fifths of the male graduates wanted and secured white-collar jobs, although the distribution of actual jobs is weighted more heavily with clerical occupations than the distribution of desired jobs. This is to be expected in the initial stages of a career development pattern. Upward mobility will probably alter the internal composition of white-collar employment over a period of time. The distribution of females differs primarily in the larger proportion who obtained jobs in the manufacturing and processing sector rather than in the clerical area as they desired. It should be noted that these are comparisons among aggregates and that no comparison is made between desired and actual occupational classifications of specific individuals. These individual comparisons are made later in the discussion of job-training relatedness.

When inter-curriculum comparisons with actual jobs obtained are made, the differences are not as sharp as they were in a comparison of the types of jobs wanted while in school. Table 45 presents these occupational distributions.

Table 45. Inter-Curriculum Comparison of Occupational Distributions, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
White Collar	38	47	53	80	75	70
Professional, technical, managerial, and kindred	17	7	7	4	4	14
Clerical and kindred	17	33	42	70	61	49
Sales and kindred	4	7	5	6	10	7
Service	5	10	9	7	6	11
Manufacturing	57	43	38	13	19	19
Specific skill	21	7	7	5	3	3
Non-specific skill	31	33	27	8	16	16
Apprentice	5	3	4	—	—	—
Total	100	100	100	100	100	100
Number	370	241	137	309	401	118

While the distribution of types of jobs wanted was similar for male graduates from both the vocational and general curricula, the general curriculum graduates actually obtained jobs similar to those of graduates from academic programs. The major differences among the males were the smaller proportion of vocational graduates in the clerical sector and the larger proportion of this group in manufacturing jobs requiring specific skills. These relationships are not unexpected because of the established criteria for entry level employment in the respective occupational sectors.

How Job Was Obtained

Employment opportunity must be realistically defined as a job opening for which an individual is qualified and of which he is aware. Vacancies which are unknown to those seeking work are not meaningful options. Lack of knowledge is a major impediment to market efficiency and effectiveness. Any assessment of the relationship between training and occupational development must take into consideration the bridge that allows the individual to move from the training environment into the job market itself. How do high school graduates get their first jobs? Table 46 shows the responses given by the vocational graduates.

Table 46. How First Job was Obtained, by Sex (Vocational Graduates Only)

	Male	Female
	%	%
Direct application	30	19
Personal or family friend	29	30
School placement	24	22
Employment agency (public or private)	8	15
Newspaper ad	4	8
Examination	1	3
Miscellaneous	4	3
Total	100	100
Number	376	316

Over one-fourth of the vocational graduates obtained jobs through their own direct application. Obviously, in this instance, job information available to the individual is a critical variable. Another 30 per cent found their first jobs through prior acquaintance (either personal or family) with the employer. Again, the possible number of opportunities is closely circumscribed. It is possible that the graduates in this group sought employment through other channels, but were either unsuccessful or dissatisfied.

Approximately another one-fourth of the graduates (24 per cent of the males and 22 per cent of the females) were assisted "by their schools." This classification includes assistance from both teachers and placement offices. Previous studies have found that teacher-assisted placement is very common among graduates from the vocational curriculum because of the contacts maintained by the instructors with employers in their particular fields. The placement office of a high school is, or should be, in the best position to perform effectively the transition function.

Little use was made by vocational graduates of other channels, such as public and private employment agencies, newspaper advertisements, and competitive examinations. Studies of the use and non-use of the public employment service are now underway, and it is possible that the depth and breadth of services offered by this agency will change dramatically as its objectives and functions undergo a reevaluation in the light of the manpower problems of the 1960's.

Table 47 compares the methods used to obtain employment by graduates of the three curricula. The major difference found in comparing the respective curricula was in the percentage who were placed through their schools. Approximately one-fourth of the vocational graduates and one-fifth of the female graduates from a general curriculum obtained their first job through this method, but less than ten per cent of the academic graduates and the male graduates of the general curriculum did so. The question raised is whether the schools can serve the transition needs of the untrained youth to the same extent that they now serve the graduates who received skill training.

Table 47. Inter-Curriculum Comparison of How First Job Was Obtained, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%	%	%	%	%	%
Direct application	30	33	42	30	30	43
Personal or family friend	29	36	29	19	18	18
School placement	24	7	3	22	20	10
Employment agency	8	15	15	15	20	19
Newspaper ad	4	6	8	8	5	8
Examination	1	—	2	3	3	—
Other	4	3	1	3	4	2
Total	100	100	100	100	100	100
Number	376	248	140	316	405	119

In general, the bridge between training and employment is an informal and unstructured one in which the individual's immediate environment is a major factor in determining where he will seek employment. A potential job market whose boundaries are determined by one's own knowledge of opportunities, plus the awareness of family and friends, is far from being optimally efficient in the sense of matching abilities and interests with available jobs. In the case of the nonvocational graduate, no marketable skill has been provided in many cases so that an efficient pipeline between school and job may be even more critical in terms of the best use of human resources.

Job-Training Relatedness

Since only about one-fourth of the vocational graduates obtained their jobs through their schools, many had to rely on their own resources to find employment that was related to their training. For the male vocational graduates this appears to have been a difficult task. The data on job-training relatedness for three major vocational areas are shown in Table 48.

Table 48. Ratings of Relatedness of School Training and Requirements of First Job

	Ratings of Relatedness				
	Job same as training	High	Somewhat	Little or none	Number
	%	%	%	%	
Business Education					
Vocational	75	3	5	17	264
General	60	5	6	29	349
Trade and Industrial	41	6	7	45	193
Technical	40	5	9	47	139

The percentages in Table 48 were obtained by examining the job title and the description of the first job of each graduate of the programs listed. A rating was then made of the degree of relationship between the program and the job. All ratings were made by one person and a liberal criterion of relatedness was used. For example, if the graduate of an automotive program was working as a mechanic, he was rated "same." If he was working as a clerk for an auto parts dealer, he was rated "high." If he was working as a delivery man for an auto parts dealer, he was rated "somewhat." These were, of course, subjective judgments, but they were all made by the same person.[2] The results agree very closely with the percentage of respondents who reported their courses prepared them for their first job (see Table 50).

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[2] It is recognized that the whole question of how to define relatedness in an objective manner deserves study in itself. This, however, was not one of the goals of the present study.

It is reasonable to assume that the school placement personnel place their best graduates in jobs which are related to their training. If the 24 per cent of vocational males who were placed by their schools is subtracted from the combined percentage of the technical and trade and industrial graduates in jobs that were rated the same or highly related, the remainder is 22 per cent. This is the per cent who obtained highly related jobs through their own efforts. It is not an encouraging figure. In addition, these graduates were probably the less skilled members of their classes. School officials want to preserve their reputations with employers and naturally will place their best graduates.

There was considerable variation among the programs within the trade and industrial and technical groups. The figures for the separate programs are shown in Table 49.

Table 49. Relatedness of School Training and First Job by Trade and Industrial and Technical Programs

	Ratings of Relatedness				
Program	Job same as Training	High	Somewhat	Little or none	Number
	%	%	%	%	
Trade and Industrial					
Sheet metal	62	—	12	25	8
Auto body	57	7	7	29	14
Printing	54	4	—	43	28
Plumbing	54	—	—	46	13
Machine Shop	51	3	11	34	35
Carpentry	40	—	13	47	15
Auto mechanics	34	10	10	45	38
Bricklaying	29	—	—	71	7
Welding	23	15	—	62	13
Cabinet making	14	14	9	64	22
Technical					
Architectural drafting	80	—	—	20	15
Mechanical drawing	48	6	15	30	46
Electronics	27	4	6	63	73
Industrial chemistry	20	20	20	40	5

Most of the *N*'s for the separate programs are quite small and the percentages must be interpreted cautiously. There are some programs with fairly substantial *N*'s, however, such as electronics, mechanical drawing, auto mechanics, and machine shop. The evidence from these programs is that about half of their graduates are obtaining jobs with very tenuous relationship to their training. This is quite surprising especially when some of these skills, e.g., auto mechanics, electronics, are reputed to be in such short supply. The explanation may lie with the inefficiency of the labor market or the reluctance of employers to hire advanced learners, which trade and industrial graduates are. Employers may say they need auto mechanics but may be reluctant to hire young high school graduates. What such employers really want are fully qualified journeymen.

Regardless of the explanation, however, the fact remains that about half, if not more, of the trade and industrial and technical graduates do not use their training in their first jobs, and, to anticipate Section II of this chapter, the data on subsequent jobs reveal no better results. If such a large percentage of these graduates do not find employment in the areas of their training, is there really a need for such specific training for so many? Would not more general occupational training have more transfer value to the variety of occupations which these young men actually enter? These questions become particularly relevant when it is recognized that many students are excluded from the vocational curriculum because of the abilities required for acceptance into the curriculum.

The data on vocationally trained females are much better. More than three out of four young women obtained highly related jobs. The figures for girls who received training for office occupations in the general curriculum, while not as high as the vocational curricula, are still much higher than those for young men.

These job-training relatedness figures for young women reflect the high demand in these areas. The figures also reflect the wide applicability of office occupation skills, and the small amount of on-the-job training usually needed to fit a young woman into an office job. For most office occupations the only vocational skill a young girl must have is typing. It is, of course, to her advantage if she is familiar with bookkeeping, can take shorthand, and can operate office machines. But usually these additional skills are not essential for the entry job.

The young male does not face this kind of labor market. If he expects to use his training, which usually is much more intensive and specific, he either has to have learned it very well or has to find an employer willing to provide the necessary additional training. A finished journeyman cannot be produced by the trade and industrial or technical training provided in the secondary schools. A finished office worker can. This factor, more than any other, probably accounts for the wide differences in the job-training relatedness of young men and women.

Ratings of Preparation

When a young graduate obtained a job, how well prepared was he for it? One of the frequent criticisms of vocational education is the alleged lack of effective communication between schools and employers. This leads, it is said, to the schools being "out of touch" with new developments, resulting in the retention of obsolete equipment and programs, and a failure to initiate new programs to meet the demands for new skills.

There are two groups who should know how good a job the schools are doing in preparing vocational students—the graduates themselves and their direct supervisors. Each member of the graduate sample was asked to rate his preparation for several specific aspects of each job held. A seven point rating scale was used, ranging from 1 (very little preparation) to 7 (excellent preparation). The supervisor named by each graduate was also requested to rate the graduate's work and preparation on a five point scale, ranging from unsatisfactory to outstanding. These ratings were requested from 1,780 supervisors. A total of 1,140, or 64 per cent, responded.

The ratings by the vocational graduates on the two most relevant areas are shown in Table 50. Both statistics, the mean and median for each variable, fell in the upper end of the scale. The respondents who gave these ratings, however, were only those who mentioned at least one course as helpful in preparing them for their jobs. The per cent of graduates who mentioned helpful courses was very similar to the per cent of graduates who were rated as obtaining jobs that were related to their high school preparation.[3] This similarity tends to confirm the accuracy of the ratings of related employment. In effect, Table 50 reports only those graduates who obtained related employment.

Table 50. Ratings of Preparation for First Job, by Sex (Vocational Graduates Only)

	Male		Female	
	Median	Mean	Median	Mean
Use of Equipment	5.0	4.9	5.0	5.2
Necessary Skills	5.0	4.9	5.0	5.3
Number	241		265	
% Rating	58%		77%	

Rating Scale:	Very Little Preparation				Excellent Preparation		
	1	2	3	4	5	6	7

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[3] The actual figures for males were 53 per cent in related occupations and 58 per cent who mentioned helpful courses. For females the figures were 83 per cent in related occupations, and 77 per cent who mentioned helpful courses.

A more severe test of the effectiveness of the vocational curriculum is to compare its preparation to that which was received in other curricula. This comparison is made in Table 51.

Table 51, like Table 50, contains only those respondents who mentioned useful courses. It is clear, both from the per cent who mentioned such course (% Rating in the table) and from the mean and median ratings, that from the point of view of the graduates, the vocational curriculum provided the better preparation; still the academic and general curricula provided some preparation. The difference between the ratings of academic graduates and the ratings of the vocational graduates can be taken as the effectiveness of specific job preparation.

Table 51. Inter-Curriculum Comparison of Ratings of Preparation for First Job, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
Use of Equipment						
Median	5.0	4.0	2.0	5.0	5.0	3.0
Mean	4.9	3.7	2.9	5.2	4.7	3.2
Necessary Skills						
Median	5.0	4.0	4.0	5.0	5.0	4.0
Mean	4.9	4.0	3.6	5.3	4.9	3.9
Number	241	114	51	265	298	53
% Rating	58%	41%	33%	77%	68%	38%

The differences found in the ratings of the graduates were not found in the ratings made by the supervisors. (Table 52) The supervisor ratings were made by the current (or last) supervisor, not the first one. Only in the case where a graduate had only one job would this information refer to the same job as previous data presented in this section.

The measures denoted as "overall performance" and "overall preparation" summarize the supervisor's rating of relative adequacy. The mean rating of each sex-curriculum group fell within the "average" range in both categories. There were essentially no differences among any of the curricula.

To test whether the graduates had obtained other jobs for which their courses had prepared them, their ratings of preparation for their last jobs were calculated. These are shown in Table 53.

Table 52. Supervisor's Mean Rating of Graduates' Relative Preparation and Performance by Sex and Curriculum

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
Occupational knowledge	3.1	3.0	3.2	3.2	3.1	3.2
Manipulative skills	3.3	3.3	3.4	3.5	3.3	3.4
Personal-social qualities	3.4	3.4	3.5	3.5	3.4	3.6
Work qualities and habits	3.5	3.4	3.5	3.6	3.5	3.6
Overall performance	3.4	3.4	3.5	3.5	3.4	3.5
Overall preparation	3.2	3.2	3.3	3.3	3.3	3.3
Number	238	168	103	252	291	88
% Rating	58%	61%	74%	74%	64%	63%

Rating Scale: 1—Unsatisfactory
2—Below Average
3—Average
4—Above Average
5—Outstanding

The graduates' ratings of their preparation for their last jobs were much the same as for their first jobs. (About one-third had held only one job so their first and last jobs were the same.) The supervisors thought the academic graduates were as well prepared as the vocational graduates. The graduates, themselves, did not. The reasons for this discrepancy are not apparent. It is possible that the academic graduates may have compensated for any deficiencies in preparation.

Table 53. Inter-Curriculum Comparisons of Ratings of Preparation for Last Job, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
Use of equipment						
Median	5.0	4.0	3.0	6.0	5.0	3.0
Mean	4.8	4.0	3.3	5.2	4.9	3.3
Necessary skills						
Median	5.0	4.0	4.0	6.0	5.0	4.0
Mean	5.0	4.2	3.8	5.3	5.1	4.1
Number	245	139	67	265	293	64
% Rating	59%	50%	43%	77%	65%	46%

Or, since they held somewhat different types of jobs, their supervisors might have been rating different types of preparation. The fact remains, however, that to their direct supervisors there were essentially no differences in the preparation or performance of the graduates of the three curricula.

Job Satisfaction

Satisfaction in a job is really a derivative of all the other factors previously discussed. One could hypothesize, for instance, that an increased number of job alternatives would lead to increased satisfaction in the job actually obtained, assuming that accurate information about the alternatives was available to the job seeker. Similarly, the better prepared an individual is, the more satisfaction he should derive from his work. Of course, these relationships have varying degrees of applicability among specific occupational tasks.

To assess each respondent's satisfaction with various aspects of his work, a seven-point rating scale, similar to the job preparation scale discussed above, was administered. A rating of 1 indicates complete dissatisfaction, and a rating of 7 indicates complete satisfaction. The ratings of work, pay, and promotional opportunity are presented in Table 54.

Table 54. Satisfaction Rating for First Job, by Sex (Vocational Graduates Only)

	Male		Female	
	Median	Mean	Median	Mean
Work	5.0	4.9	5.0	4.8
Pay	4.0	3.8	4.0	3.8
Promotion	3.0	3.3	3.0	3.3
Number	384		321	
Rating Scale:	Dissatisfied		Satisfied	
	1 2 3	4	5 6 7	

The ratings given by the graduates on satisfaction were somewhat lower than those given on the job preparation scale. For example, both male and female graduates were less than completely satisfied with their pay and opportunities for promotion in their first jobs. The graduates registered general satisfaction with the work tasks performed. Similar patterns were found for the graduates of the other curricula (Table 55), and there were no significant differences among them.

In addition to the job satisfaction rating scale, a second instrument

Table 55. Inter-Curriculum Comparison of Satisfaction Ratings for First Job, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
Work						
Median	5.0	5.0	5.0	5.0	6.0	5.0
Mean	4.9	4.8	4.6	5.1	5.3	5.0
Pay						
Median	4.0	4.0	4.0	4.0	4.0	4.0
Mean	3.8	3.8	3.8	3.9	4.2	4.1
Promotion						
Median	3.0	3.0	3.0	4.0	3.0	3.0
Mean	3.3	3.3	3.5	3.5	3.2	3.1
Number	384	249	139	321	410	123

was administered as a corollary, or validation, measure. This instrument, called a Job Description Index, consists of a series of positive and negative words and phrases describing each of five aspects of the job situation. Scoring of the completed instrument was structured so that high scores indicate a positive description of that aspect of the job environment. The results are presented in Table 56. The descriptions have reference to the current (or last) jobs of the graduates. The means are quite similar to the medians.

Table 56. Median Job Description Index Scores Current (or last) Job, by Curriculum and Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
Work	37	35	34	38	39	36
Pay*	36	36	36	36	40	32
Supervision	45	45	47	48	46	48
Promotion*	30	26	32	22	20	18
People	48	48	46	48	48	47
Number	391	254	146	325	412	125

Scoring Scale: 0—only negative job descriptions checked
54—only positive job descriptions checked

* Obtained score multiplied by 2 to yield scores comparable to other three scales

It is apparent that personal relationships were highly rated—supervision and people worked with—but the actual job conditions were less favorably described. The description of promotional opportunity by female graduates of each curriculum was particularly negative. Virtually no differences were evidenced among the curricula or the two sexes in the various aspects of the job other than promotional opportunity.

Starting Pay

One measure of the value of a curriculum is the earnings its students can command upon graduation. Shown in Table 57 are hourly earnings by curriculum and sex. All subgroups but one received the same median wage, and the range of the distributions was very similar. It is not possible to argue, at least from these data, for the superior marketability of one curriculum as opposed to another.

On the hypothesis that differences in starting wages among sex-curriculum groups may have been obscured by other factors, it was decided to run a multiple regression analysis of starting pay. This technique consists of intercorrelating starting pay with all the other variables thought to influence it. It is explained briefly in Appendix A. Table A-2 contains the starting pay variables and their related statistics.

Table 57. Starting Pay* for First Job, by Curriculum and Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	$	$	$	$	$	$
Lowest Decile	.80	.90	.80	.80	.70	.90
Highest Decile	2.20	2.10	2.10	1.80	1.70	1.80
Group Median	1.20	1.20	1.20	1.20	1.10	1.20
Number	379	243	140	312	397	114

* Gross hourly equivalent, medians

Not surprisingly, differences in the size of local labor markets proved to be significant in explaining differences in earnings. When compared to the small city (which is the base of comparison), the graduates from medium-sized and large cities tended to receive higher starting pay. It is not possible to say whether the large city graduates received higher starting pay than medium-sized city graduates. This would require another analysis with the medium-sized city entered into the intercept.

IQ proved to be a significant determinant, as did sex, in explaining earning differentials. The race coefficient, however, was not significant. The probable reason for this was explained in Chapter 5 in the section on "Groups with Special Problems." It was noted in that section that Negroes were under-represented in the sample. Those who were included were probably the more successful ones who had the characteristics that are required to obtain employment in the face of discrimination. They also tended to be employed by the larger, more progressive firms who agreed to participate in the study.

As explained in a footnote to Table A-2 in Appendix A, the differences in starting pay for graduates from the various curricula are measured relative to academic graduates. The tendency is for academic graduates to obtain higher starting salaries (as indicated by the negative signs on the coefficients of the other curricula). The only significant difference, however, is between the general curriculum and academic graduates. It is true that neither the academic nor the general curriculum provides job-oriented background. The most likely explanation for the difference in starting salaries lies in the fact that the academic graduates had more ability than the general curriculum graduates and came from higher socioeconomic backgrounds. This was shown by the regression analysis of curriculum choice (Table A-1 in Appendix A). It is reasonable to assume that more and better job opportunities existed for them because of their ability and the job knowledge of their family and friends.

The coefficients for "first job occupations" confirm what would be expected, namely, that semi-professional, managerial, and trade jobs offer higher initial pay than do jobs in service, clerical, and sales. Two comments seem relevant regarding the trades. First, there is likely to be a higher degree of unionization among the trades, and, second, while the difference is not significant, the starting pay in specialized trades is lower than non-specialized trades, largely because of the low initial salary paid to apprentices.

Post-high school training does not appear to account for a significant pay differential, but the relationship of high school training to first job occupation does. That is, those who obtained training related jobs generally received higher starting pay.

In the above model other variables were considered and then dropped when it was revealed that they made a negligible contribution to an explanation of the variance of the dependent variable. These variables included father's education, year of graduation, and method through which job was obtained.

Reason for Leaving First Job

Having had a job for at least three months (the vocational graduates held their first jobs for a median period of one year), why would a person leave? Turnover is of critical importance for manpower planning, because it is the dynamic nature of the labor market which has caused such difficulty in attempting to match supply with demand. What makes a person geographically and occupationally mobile? What differentiates the risk-taker from the risk-averter, as far as job changes are concerned?

The 61 per cent of the graduates who entered the labor market and who had had at least two full-time jobs were asked why they had left the first job obtained after graduation. Table 58 shows the responses to this query.

Table 58. Inter-Curriculum Comparison of Reasons Given for Leaving the First Job, by Sex

	Male			Female		
	Vocational	General	Academic	Vocational	General	Academic
	%[a]	%[a]	%[a]	%[a]	%[a]	%[a]
For better job	23	16	22	12	15	13
Promotion within company	4	2	3	2	2	—
Dissatisfied	18	24	18	24	25	18
Laid off[b]	17	16	10	11	14	8
To enter service	11	5	5	—	—	2
To return to school	5	6	13	2	2	6
Marriage—pregnancy	—	—	—	10	17	19
Miscellaneous	6	12	6	11	13	8
No reason given	16	19	22	28	12	26
Total	100	100	99	100	100	100
Number	247	161	77	185	245	62
Number as per cent of total sample	66%	65%	56%	58%	60%	52%

[a] Percentages are based only on the number in the respective categories who left their first job.

[b] This category contains less than one per cent who were fired.

The only consistent difference in reasons for leaving jobs among the curricula was the academic graduates' more frequent return to school. The graduates of an academic curriculum probably were better prepared to return to school both because of the institutional requirements of post-secondary education and because of the general socio-economic background of the group as a whole. The majority of academic graduates had planned to obtain additional education while in high school, and some may have been carrying out delayed plans. It is interesting to note that males from all three curricula were about twice as likely to return to school as their female counterparts.

In light of the small number of graduates who were advanced within a company it is necessary to ask what obligations employers have to provide on-the-job training at company expense. If the average young employee remains on the job for only one year, the employer will be reluctant to allocate money or time to train a person to fill advanced jobs. Of course, every employer benefits from the efforts extended by others similarly situated, but it is the outflow of internally trained manpower that is noticed, not the inflow of externally trained people. This problem should receive increased attention. For instance, what impact does the probability of military service confronting single males have on the decisions of employers to provide skills necessary for upgrading? The marriage prospects of female high school graduates present a similar problem to employers.

II: INDICES OF TOTAL EMPLOYMENT EXPERIENCES

To this point the discussion has concentrated on measures of first job experiences. These provided an estimate of the immediate payoff of high school preparation. About two-thirds of the respondents, however, held more than one job and their experiences on subsequent jobs should also be evaluated.

Because the experiences among the graduates varied so greatly it was necessary to reduce their job histories to common bases. These indices provide the same kind of information whether the individual held one job or seven. There are three indices discussed below: (1) employment stability, (2) earnings progression, and (3) average monthly earnings. Each of these is defined and discussed separately.

The summary statistics for the indices for each sex-curriculum group are presented in this section and the tables with the multiple regression statistics are presented in Appendix A. General business education, because of its heavy enrollment of females, is separated from the rest of the general curriculum.

The discussion relies mainly on regression analyses. The summary statistics indicate the value of the indices when sex and curriculum are held constant. The multiple regression technique is more powerful because it permits simultaneous estimates of the relative influence of all of the variables entered into the equation. To calculate multiple regression equations, however, it was necessary to eliminate all respondents with incomplete data. Hence the tables in this section have lower *N*'s.

The final measure discussed in this section is the degree of job-training relatedness in jobs after the first job.

Employment Stability

Employment stability was defined as the per cent of time the graduate was employed from the time of his graduation, that is, the ratio of months employed over months available for employment. "Months employed" was limited to employment in jobs that met the definition of this study—a job of 30 or more hours per week which was held for three months or longer. "Months available for employment" included all months since graduation, except those spent in the service. Months in post-high school training and other "unaccounted for time" were included. This "unaccounted for time" included jobs that did not meet the study definition.

The summary statistics for the variables that were used in the employment stability index are shown in Table 59. The mean per cent of time employed, it should be noted, is not the ratio of the mean of months employed to the mean of the months available. The index was calculated separately for each respondent. The means and standard deviations in Table 59 are based on the sum of these individual calculations.

It is clear from Table 59 that the graduates from the curricula that gave occupational training—the vocational and general business curricula—were employed a greater percentage of time. It also appears that males had less time unemployed than females. Both of these findings were confirmed by the multiple regression. In addition to these two variables four others were found to be significantly related to the per cent of time employed. The additional variables were size of city, whether or not post-high school training was taken, the degree of relatedness between training and job, and classification of first job.

It was found that respondents from the large and middle-sized cities had more stable employment than the respondents from the small city. Obtaining employment that was highly related to high school training was also related to stable employment. Because of the nature of the index, however, taking post-high school training was associated with less stability. This is shown in Table A-3 by the negative sign on the

Table 59. Mean Months Worked, Months Available for Work, Per Cent of Time Employed, and Number of Jobs by Sex and Curriculum

	Male				Female			
	Vocational	Gen. Business[a]	General	Academic	Vocational	Gen. Business[a]	General	Academic
Months Employed								
Mean	25	24	23	23	28	27	24	25
Standard Deviation	17	16	16	15	18	16	16	17
Months Available								
Mean	30	29	30	30	34	35	37	38
Standard Deviation	17	17	17	17	17	18	19	18
Per Cent Employed[b]								
Mean	80	80	71	74	80	76	66	65
Standard Deviation	23	21	25	23	25	26	28	31
Number of Jobs								
Mean	1.8	2.1	1.8	1.8	1.6	1.5	1.6	1.6
Standard Deviation	1.0	1.3	1.0	1.0	.8	.7	.8	.8
Number	287	50	83	110	271	247	83	95

[a] For the multiple regression analyses General Business, because of the 83 per cent female enrollment, was separated from the regular general curriculum.

[b] Calculated for each individual separately, hence the group average is not the same as the ratio of the mean months employed to the mean months available.

variable. The only occupational group that was significantly more stable than the others was the clerical-sales classification.

The variables of most interest, of course, show that higher employment stability, i.e., less time unemployed, is associated with having taken occupationally-oriented training and having obtained a job that utilizes this training.

Earnings Progression

Employment stability is an insufficient criterion in itself. Steady employment in an unsatisfying or poorly paid job would hardly be considered an indication of the success of a curriculum. Fortunately the data on earnings are consistent with those on employment stability.

One index employed was earnings progression—rate of increase in pay during the months the graduate had been employed. The following formula was used:

$$\text{Earnings Progression} = \frac{(L\text{-}S)\ 4.33}{M} \times 10$$

Where:

L is current (or last) weekly rate, last job held

S is beginning weekly rate, first job held

4.33 is number of working weeks in average month

M is number of months of full-time work (Note: this is not months available for employment)

10 is a constant used to avoid decimals

The figure calculated by this formula is a rate and, as such, is dependent not only on the increase in pay but also on the time period over which the increase was achieved. The mean weekly starting pay and most recent pay are shown in Table 60. The mean earnings progression figure is based on the total of the individual figures.

Table 60. Mean Weekly Starting Pay, Most Recent Weekly Pay and Index of Earnings Progression by Sex and Curriculum

	Male				Female			
	Vocational	Gen. Business[a]	General	Academic	Vocational	Gen. Business[a]	General	Academic
Weekly Starting Pay	$	$	$	$	$	$	$	$
Mean	58	56	55	58	50	48	46	54
Standard Deviation	18	14	16	25	11	11	13	12
Most Recent Weekly Pay								
Mean	84	80	75	75	65	62	61	66
Standard Deviation	29	22	28	24	19	16	17	15
Earnings Progression[b]								
Mean	53	54	40	34	25	26	32	23
Standard Deviation	77	55	54	46	31	38	33	27
Number	287	50	83	110	271	247	83	95

[a] For the multiple regression analyses, General Business, because of 83 per cent female enrollment, was separated from the regular general curriculum.

[b] Earnings progression is an index number that reflects rate of earnings increase over months of employment. It was calculated separately for each respondent. The figures shown represent the average of the individual figures.

Table 60 shows that males started at higher rates and progressed more. And as Table 59 showed, this progress was, on the average, over shorter periods of employment.[4] The most striking figures in Table 60, however, are the standard deviations of the earnings progression. These are larger than the means in every case. This indicates the wide variation in the earnings history of the graduates.

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[4] Table 57 indicated the median hourly starting wage did not differ by sex; however, the male distribution was skewed to higher rates. These higher rates pull up the mean figures for males shown in Table 60.

The limited number of significant variables in the multiple regression (Table A-4) reflected this wide variation. Only three classification variables—sex, curriculum, and city size—were significant. Males, vocational curriculum graduates, and respondents from the middle-sized city all experienced significantly more increases.

Two other variables that were included in the calculation of the index of earnings progression were also included in the regression equation. These were starting pay and per cent of time employed. As expected, these both had negative coefficients. The coefficient on starting pay indicates that graduates whose starting pay on their first jobs was low had more opportunity to advance. The coefficient on per cent of time employed indicates that those who were employed more progressed at a less rapid rate. This is a function of the formula used for calculating earnings progression. That is, large amounts of time in the denominator tended to reduce the rate of change in earnings in the numerator. Whether or not the individual took post-high school training was not related to the rate of change in his earnings.

In this regression, unlike the others in this section, the general business curriculum was not associated with more favorable performance. This is probably explained by the disproportionate (83 per cent) female enrollment. Table 60 shows that the male graduates of the general business curriculum progressed at as fast a rate as the male graduates of the vocational curriculum. This progress, however, was obscured by the female data. Because there was an equal male-female division in the vocational curriculum, the progress of the males was not hidden.

Average Monthly Earnings

Average monthly earnings were calculated by multiplying the individual's monthly earnings in each job by the number of months he was employed in the job. These earnings were summed for each job and divided by the number of months he was available for employment. Months available for employment was calculated in the same way that it was for the employment stability index. Time spent in the service was not included, but time in post-high school training, or other "unaccounted for time," was included.

The average monthly earnings in Table 61 show the same general results as the indices in Tables 59 and 60—namely, the superior performance of male graduates who were occupationally prepared.

Table 61. Mean Monthly Earnings by Sex and Curriculum

	Male				Female			
	Vocational	Gen. Business[a]	General	Academic	Vocational	Gen. Business[a]	General	Academic
	$	$	$	$	$	$	$	$
Monthly Earnings								
Mean	272	256	225	227	222	210	174	189
Standard Deviation	123	95	134	94	93	105	89	101
Number	287	50	83	110	271	247	83	95

[a] For the multiple regression analyses, General Business, because of 83 per cent female enrollment, was separated from the regular general curriculum.

The other variables included in the multiple regression yielded the relationships that would be expected. Respondents from the middle-sized and large cities earned more, as did the graduates whose first jobs were highly related to their training. Respondents who had been in the labor market longer, *i.e.*, had graduated earlier, had higher average earnings. Respondents whose first jobs were classified as clerical-sales, or specific skills, also earned more.

The one negative coefficient in the equation was for post-high school training. The 10 per cent of the respondents who took such training had lower earnings because months spent in training programs were included as time available for employment. The rationale for this procedure was that taking post-high school training was considered a cost of not having obtained employable skills while in high school. It is true that academic graduates take such training in greater proportion than graduates of the general and vocational curricula. Even when all those who took post-secondary training are removed from the sample, the vocational and general business curricula still have higher average earnings.

What, in total, do the three analyses reveal about the occupational experiences of the graduates? On all three indices graduates of the vocational curriculum were significantly better than the graduates of academic and general curricula. On two of the three indices, earnings progression excepted, general business graduates also proved to be better. Vocationally oriented preparation thus resulted in a clear advantage. The advantage appeared to be associated with obtaining a job which was related to their preparation. The employment stability and average monthly earnings indices were significantly higher for those graduates whose first jobs were highly related to their training.

The other variables in the multiple regression equations (sex, race, IQ, city size, job classification, etc.) were included to give more accurate estimates of the net effects of curriculum and training relatedness. These other variables in most cases show only what would be expected; for example, males earn more. When the sex variable is included in the equation, the net effect of being male is reflected in the partial regression coefficient for that variable. By including such significant variables, the estimates of the effects of the variables of interest—curriculum and training relatedness—are made more precise.

In all the tables IQ and race are included even though they were not significant. There is a strong temptation to assume that they must be explanatory variables—surely smarter people get better jobs and Negroes get poorer jobs. Unfortunately, the data in this study consistently refuse to support these assumptions. The explanation for these nonsignificant findings may lie in the restricted nature of the sample—all respondents were high school graduates who did not go on to college. Those graduates with somewhat lower IQs may have compensated for their deficiencies by working harder. And the Negro graduates who were interviewed may not have experienced the job discrimination that the average Negro graduate or dropout faces.

Job-Training Relatedness

Section I of this chapter showed that only about half of the young men who took a trade and industrial or technical program in high school obtained a job that was related to this training. The proportion was much better for vocationally trained girls. Over three-fourths of the girls found related employment. In later jobs the figure remained about the same for young women but became worse for young men. This high proportion for girls would be expected given the limited offerings, usually office occupations, and the great demand for this type of training. Table 62 presents the figures for the business, trade and industrial, and technical programs.

The size of the sample of those who held second and third jobs becomes too small to present the separate specialties within the trade and industrial and technical areas. The general trend is the same within most of them. If a male graduate's first job is not related to his training, it is unlikely that subsequent jobs will be.

Table 62. Ratings of Relatedness of School Training and Requirements of First to Third Jobs

		Ratings of Relatedness				
		Job same as training	High	Somewhat	Little or none	Number
Business Education		%	%	%	%	
Vocational						
Job	1	75	3	5	17	264
	2	75	7	4	14	145
	3	72	2	5	21	58
General						
Job	1	60	5	6	29	349
	2	60	5	7	29	178
	3	57	7	8	28	60
Trade and Industrial						
Job	1	41	6	7	45	193
	2	29	9	4	58	121
	3	25	2	11	63	57
Technical						
Job	1	40	5	9	47	139
	2	36	9	5	49	77
	3	22	7	26	44	27

III: THE COSTS AND BENEFITS OF VOCATIONAL EDUCATION

Although the indices of employment experience, in terms of employment and earnings, showed an advantage for vocationally prepared graduates, one cannot speak of the extra "payoff" of vocational education without relating it to the extra costs of this type of education. The smaller class size, the special preparation required of the teachers, the consumption of instructional materials, and the larger capital costs suggest that the costs per pupil in vocational education would be higher than those for academic education.

The present study had available to it some of the cost data gathered in connection with another study being conducted by the Institute for Research on Human Resources.[5] Although these cost figures cover only current, not capital, costs, they do show that vocational education is more expensive. These cost data are based on the graduating classes of 1959 and 1960 from one large city.

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[5] Kaufman, J. J., Stromsdorfer, E. W., Hu, T-w., and Lee, M. L. *An Analysis of the Comparative Costs and Benefits of Vocational versus Academic Education in Secondary Schools.* (Preliminary Report) The Institute for Research on Human Resources, The Pennsylvania State University, October, 1967.

The present study had 65 respondents from the 1960 graduating class in the same large city. Measures of the employment experiences of these graduates were used as estimates of the benefits of vocational education against which its costs were compared. Since, however, there were only 65 graduates for whom cost data were available, the conclusion drawn from these data must be regarded as highly tentative. The data do suggest, however, that the extra benefits derived from vocational education justify the extra costs involved.

The techniques of applying cost-effectiveness analysis to questions of social policy are still being evolved and refined. One of the major aims of the study from which the cost data were obtained is to specify the theoretical assumptions and empirical data required for a cost-effectiveness analysis of vocational education. Although this type of evaluation is highly technical, the steps in this type of analysis are described in general terms in Appendix B. It is appropriate that, at this point, these steps be described in non-technical language.

As the name of the technique, "cost-effectiveness," implies, two separate measures are required in the examination of any program. The measure on the input side is the cost of conducting the program. The measure on the output side is an estimate of how effective the program has been. This measure does not necessarily have to be in the dollar terms but, if it is, it can be compared to the money costs in a direct manner.

The effectiveness measure used in this analysis was average monthly earnings. This is the same measure described in Section II of this chapter. For the 65 graduates for whom cost data were available it was found that the vocational graduates had significantly higher earnings—$70 per month more than non-vocational graduates. (See Table B-1 Appendix B.)

The cost data were obtained from the records of the school district. The marginal cost for a vocational student was $553 and for a non-vocational student (academic or general curriculum), $374.[6] These costs were based on three years of senior high school—the tenth, eleventh, and twelfth grades.

The extra costs of educating a vocational student and the extra benefits (earnings of $70 per month over the five year period examined) resulting from this type of education were then compared in two different ways. The first method compared the net "present value" of the vocational training. This approach consists of adjusting both the cost and benefit figures to reflect the net return from the money spent on the program. When a six per cent interest rate was used to adjust the figures, the extra costs were found to be about $1,500 and the benefits almost $11,000. When a 10 per cent interest rate was used, the extra costs were just under $1,400 and the extra benefits were a little over $6,200. (See Tables B-5 and B-6.) Under both of these interest rates vocational education clearly yielded a return in excess of its costs. A range of benefits was also estimated from the statistics and, even at the lower end of this range, the return was still positive.

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[6] By marginal cost is meant the extra cost of educating an additional student.

The second method of comparing the costs and the benefits was the "internal rate of return." This is a direct comparison of the extra costs to the extra benefits. It is expressed as a percentage, which in this particular case was approximately 35 per cent. In the study from which the cost data were obtained this figure was about 30 per cent.[7]

Both of these methods involve a number of assumptions, such as projecting the observed benefits, which are based on a five year period, over the total working life of the respondents. And, it should be recalled, the benefit data are based on only 65 respondents from one city. These figures thus must be regarded as only suggestive. Nevertheless, both methods point to vocational education as a worthwhile economic investment as compared with non-vocational education as presently conducted. While the exact level of the return cannot be specified, it seems fairly constant that it is positive. On the basis of a criterion of economic efficiency alone, the extra benefits derived from vocational education exceeded its extra costs by a sufficient amount to justify continuation of the program.

This result was found for two out of five graduating classes in the city where cost data were available. It will be recalled that for the total sample vocational education was also associated with higher net monthly earnings. These extra earnings were less, however, than the amount found for the 65 graduates discussed above. The net benefit for the vocational graduates in the total sample was about $25 per month, or almost $300 per year. As long as vocational education is associated with significantly higher earnings, its return will be positive. If the cost data were available for the total sample, it seems likely, because of the lower net benefits, that the measures of returns would be lower.

This analysis provides supporting evidence of the value of vocational education only in economic terms. It is based solely on the employment experiences of students who have been served by vocational education in its traditional form and who have graduated from this curriculum. This is emphasized for several reasons. First, it is recognized that the economic criterion should not be the sole factor in the evaluation of a curriculum. Second, it is known that the dropout rate for vocational education is relatively high (it may well be that the dropout rate would be higher if the vocational curriculum were not available), and there is, at present, no accurate knowledge of the earnings differentials between graduates and dropouts. Third, the comparison is between the vocational graduate and the non-vocational graduate. There is little knowledge of how vocational education would compare with an innovative curriculum which would broaden the appeal of occupational training to a larger proportion of the students. This point is discussed in greater detail in Chapter 8.

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[7] Kaufman *et al.*, p. 148.

IV: SUMMARY AND CONCLUSIONS

The results presented in the previous chapters on the experiences of the graduates in the three cities while they were in school were, in general, not especially favorable to the vocational graduate. This chapter, however, on the work experiences of the graduates presents results which stand in sharp contrast. On the basis of the various measures presented in this chapter, it was found that the vocational graduates do as well as, or better than, the graduates of the other curricula.

The chapter is divided into three sections. The first section discusses several measures of the experiences of the graduates in their first job. The second section discusses indices of the total work experiences of the graduates in all of their jobs. The third section describes in nontechnical language a cost-effectiveness analysis of vocational education.

In their first jobs the vocational graduates reported that they considered themselves better prepared for their jobs, they started at a median wage rate equal to that of the other curricula, and they were as well satisfied with their jobs as the graduates of the other curricula.

Over their total employment history (from the date of graduation to the date of the interview) the vocational graduates had greater employment stability (less time unemployed), received more rapid increases in earnings, and received higher average monthly earnings. By all these criteria, graduates of the vocational curriculum were found to be as well or better prepared for employment.

Even when the extra costs of vocational education are considered, vocational education would appear to be a useful investment. Recognizing that there were a limited number of respondents, 65, for whom cost data were available, it was found that the extra earnings of the vocational graduates in this subsample justified the costs of their education.

There were only two measures that could be interpreted as not reflecting favorably on vocational education. One of these was the ratings of the work performance of the graduates by their direct supervisors. It seemed reasonable to expect supervisors to rate the vocationally trained graduates more favorably, but they did not. They did not rate vocational graduates as less prepared than graduates of other curricula but neither did they rate them as being better prepared. The ratings by the supervisor thus failed to confirm the ratings of the graduates themselves.

The other set of results that was not favorable to vocational education was concerned with job-training relatedness. Less than half of the male graduates obtained jobs that were directly related to their training. The regression analyses showed that obtaining a related job was associated with better performance on the employment indices. It seems, therefore, that vocational education was most useful for those graduates who obtained related jobs. When this fact is considered in light of the small percentage of males who were enrolled in the vocational curriculum, some basic questions can be raised.[8] Granted the payoffs for those who obtained related employment, is specific skill training necessary for very many? If vocational education is expanded along the lines presently contemplated, what percentage will be able to find related employment in the future? If such a limited number find related employment, should the schools make the investment that is required to give this training to this limited number? Might not broader occupational training, at lower costs, produce similar results and attract more students?

These questions arise despite the favorable findings on vocational graduates. They arise because of the relationship found between vocational preparation and the opportunity to use that preparation. If the individual does not have the opportunity, and more than half the males did not, it appears that the specific training is of little advantage. The individual would have been as well off in a general or academic curriculum—if he could have survived them. On the assumption that these latter curricula would not meet the needs of occupationally oriented students, it would appear that vocational education should expand its offerings on broader lines in a manner discussed in Chapter 8.

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[8] The following remarks apply primarily to trade and industrial and technical training for males. On the criteria of enrollment and related employment, vocational education for females shows up very well. It must be recognized, however, that these findings reflect a society that severely proscribes what are "acceptable" vocational roles for females. This issue is discussed further in Chapter 5.

The current efforts of the State to expand vocational education along largely traditional lines make this finding all the more important. With the low enrollments in the trade and industrial and technical programs (about 11 per cent of the males in the three cities studied), less than half of their graduates obtained related employment. If these enrollments were raised to 50 per cent or 75 per cent of total enrollments, as some educators hope, it seems unlikely that the percentage finding related jobs would rise correspondingly. If most vocational graduates were not able to find employment related to their training, they probably would realize little advantage in the labor market as a result of their training.

None of the foregoing is meant to deny that for a small proportion of students specific skill training may be exceedingly useful both to the students and to society. What is stressed is that the majority of students is not being served by any curriculum. Vocational education has a "know how" which could be useful to these students if it can design new programs to attract them.

8

IMPLICATIONS AND RECOMMENDATIONS

A review of the data in this report, which are based on a study of three cities, would tend to lead one to the conclusion that traditional vocational education has been successful and that additional resources should be devoted to it. There is certainly much evidence that points to such a conclusion. Vocational graduates thought that they were better prepared for their jobs than graduates of the academic or general curriculum. Vocational graduates experienced less unemployment, had more rapid increases in earnings, and received, on the average, higher monthly incomes. Even when the higher costs of vocational training are entered into the equation, vocational education still yielded a higher return.

All of this evidence testified to the success that vocational education has had with its students. To say this, however, is not the same as saying that more resources should necessarily be employed for vocational education. Nor is it being suggested that vocational education, as it has been conducted in the past, should be curtailed. In this chapter it is argued that the strength of vocational education does not lie solely in its ability to give specific skill training. Its strength also lies in its potential to enhance the relevance of the high school experiences of the large proportion of students to whom school is presently boring and frustrating.

This boredom and frustration stems from the inability of the schools to find ways of reaching those students who are neither going on to college nor willing or able to meet the requirements of the vocational curriculum. These students enter the labor market after leaving school and begin a process that has been described as "floundering" as they move from one job to another. They are unsure of the type of work they wish to do and are unable to formulate and carry out vocational plans.

These students are not those who are usually referred to as the "culturally deprived" or "culturally disadvantaged." The disadvantaged are a different group with all of the problems of the students described above plus the additional problems that stem from their impoverished circumstances. These include alienation from society, inadequate preparation for school tasks, a life style incompatible with school requirements, insufficient family support, and an absence of successful role models.

These latter traits do not characterize the typical students who drift through the general curriculum. These students usually come from homes where the necessities of life have been provided. Their families are relatively stable. They have usually internalized the goal of upward occupational mobility. They do not, however, see the relevance of their high school experiences to this goal. These students have assessed their opportunities of entering college and, in many cases, have realistically concluded that such opportunities are limited to them. They may have also found that the requirements for entering, let alone completing, a vocational curriculum are too high. In a similar manner they conclude that the skilled trades are closed to them, either because of union restrictions or because of restrictive employer policies. Most other occupations are either unknown or considered too difficult because of the job requirements.

As schools are presently constituted, they have nothing to offer these students. These are, however, precisely the students that vocational education has an opportunity to serve providing it can develop new programs—some of which are described below—for them. The industrial arts programs which are usually given as part of the general curriculum make an attempt to provide the occupational exploration which these students need. But, according to one study, they fall far short of this goal.[1] Industrial arts programs enroll too few students for too little time with too little exposure to occupations. They are primarily programs offered in the junior high school in a few areas—mainly woodworking, drafting, and metalworking. As serious as these limitations are, they are not the most crucial ones. The most serious is the failure to integrate the industrial arts programs with the other courses in the curriculum.

In the type of reoriented vocational education that is being recommended, skill training would provide a means, other than verbal, for self-expression. It would bring meaning and relevance to the study of the other elements of the curriculum, such as mathematics, science, social studies, and communications. The total curriculum would attempt to foster in its students a positive orientation to their future vocational lives. It would attempt to develop responsible work habits as well as the attitude that one can plan and control his vocational life. The curriculum would do this while, at the same time, it provided the opportunity to explore and learn the nature of fundamental vocational skills that can be transferred to a variety of occupations. The evidence and thinking that has led to these recommendations are presented in detail below.

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[1] Schmitt, M. L., and Pelley, A. L. *Industrial Arts Education,* U. S. Office of Education, Washington, D. C.: U. S. Government Printing Office, OE 33038, 1[illegible].

This chapter has the following organization: the evidence gathered in this study is presented and, because evaluations are rarely all black or all white, it is grouped into those findings that are generally favorable and those that are generally unfavorable to vocational education. Drawing on these data, the reasons why traditional vocational education should not be expanded are presented. To say traditional vocational education should not be *expanded* is not to say that it should be abolished. There is need for the traditional programs and most of the evidence indicates that they have served well those students who have taken them. The pressing need for *expansion*, however, is not along traditional lines. Given limited educational resources, consideration should be given to using these resources for the occupational training of a large proportion of students. Consideration should also be given to the shifting of resources from the academic and general curricula to this newer approach to occupational training. The need is for programs that utilize the special features of vocational education to bring relevance to the school experiences of those students who are not served by any of the existing curricula. Some experimental programs which are attempting to incorporate these features are described.

In the final section four other issues that have arisen in this study are considered. These are: the degree to which vocational offerings should be matched to labor market needs; whether vocational education should be conducted in a comprehensive high school, an area vocational high school or a separate vocational-technical high school; the role of vocational guidance and counseling, and the role of vocational education in the training of girls and Negroes. In conclusion, specific recommendations with respect to vocational education are made.

It should be emphasized that the conclusions presented below are not based solely on data collected from the three selected cities in Pennsylvania. They are influenced by other studies conducted by the authors as well as relevant research by others. Some communities have already begun to adopt some of the suggestions. Others, it is hoped, might consider these suggestions in the development of a curriculum appropriate to meet the needs of students.

The Evidence on Vocational Education

Before reviewing both the favorable and unfavorable evidence on vocational education, the basic difference in the nature of vocational education for males and females should be noted. Using the number enrolled as a criterion, the only significant vocational program for females is office occupations. The skills learned in this program can be applied in almost any office and in any type of organization. The amount of on-the-job training needed to make an office worker fully productive is usually minimal.

The labor market that males face is quite different. The skills that males acquire in their vocational programs do not have as wide a market as office skills. Even if a young man finds a job that uses the skills he has learned, it is usually as an advanced learner—not as a fully qualified worker. He must be prepared to undergo several additional years of training, often at lower pay than he could earn in other jobs. And the chances are less than 50:50 that he will obtain a job where he uses the skills he has studied.

In addition, the selection of the vocational curriculum limits the kinds of post-high school education that its graduates can obtain. In light of these considerations it is not surprising that relatively far fewer males than females select the vocational curriculum.

Even more powerful than these quite realistic considerations may be the psychological "acceptability" of the vocational curriculum for males. Males in our society, more than females, are supposed to "succeed" in life. Success is usually defined in terms of upward occupational mobility. Sociological investigations usually conclude that there is, in reality, very little such mobility. But the popular myth remains. And education, primarily college education, is seen as the main avenue for such mobility. With this prevailing set of social values vocational education is regarded by many as acceptable only for those males who "just don't have it" for college.

Vocational education is thus a fundamentally different experience for males. For girls it is acceptable, well suited to their plans (primarily marriage), and offers high potential for immediate employment. For boys it is a much more risky venture. It may limit their future options, there is uncertainty as to whether they will use the skills they study, and it may suggest the acceptance of second-class status.

The Favorable Evidence. The evaluations which were most favorable for vocational education were derived from the work histories of the respondents. These consisted of three indices of vocational experience covering the period from the date the respondents were graduated until the date they were interviewed. The indices reflected average monthly earnings, earnings progression from first to current job, and the per cent of time employed.

The significance of these indices was evaluated by multiple regression analysis. This analysis included simultaneous estimates of the effects of other variables, besides curriculum, which might have influenced the indices. These other variables included: sex, race, city, whether or not post-high school training was taken, and whether or not high school training was related to employment. The analysis yielded a carefully controlled estimate of the separate influence of the curriculum. On all three indices the vocational graduates fared significantly better: they had higher average monthly earnings, more rapid increases in earnings, and were employed a greater proportion of the time that they were available for employment.

The measures of first job experience were not quite so positive. The vocational graduates considered themselves better prepared for their first jobs. They mentioned more frequently the courses that had helped to prepare them and rated these courses more favorably than the graduates of the academic or general curriculum. With regard to job experiences, however, the vocational graduates were not more satisfied with their first jobs than the graduates of the other curricula. Their starting wages were the same as those of graduates of other curricula, but not higher. Their direct supervisors rated them as well prepared as graduates of the other curricula, but not as better prepared.

These findings are not negative, but neither are they positive. Differences which might have been expected were not found. It seemed reasonable to assume, *a priori*, that vocational graduates would do better on these various criteria, but they did not. The vocational curriculum did not appear to have given its graduates any advantage on these measures of actual experience on first jobs.

The "on-site" evaluations of the various vocational programs in the three cities typically yielded ratings of satisfactory or better. The distributive education, home economics, and office occupations programs received the highest average ratings. The trade and industrial and technical programs had a few handicaps which lowered their ratings but they were, generally, still favorable. Technical education did not seem to be comfortably situated at the secondary school level. The offerings in the trade and industrial program covered a broad spectrum and the average ratings tended to be lowered by the poorer ones. General agriculture was only offered in one school system, and when it was evaluated, it was not organized as a vocational program.

Each program was rated on several categories. Instructional staff received the highest average rating—4.25 out of a maximum of 5.00. The teachers were well-trained in their skill areas and personally dedicated. The aims and objectives of the programs and the organization of instruction were also highly rated. Physical facilities received satisfactory ratings. Guidance, placement, and follow-up received the lowest average rating and in the technical and trade and industrial programs it was rated as less than satisfactory. These ratings were confirmed by the results of the interviews of the graduates discussed next.

The Unfavorable Evidence. Some of the evidence already presented could be regarded as unfavorable. The failure to find higher supervisor ratings for vocational graduates is an example. The evidence that will be presented in this section, however, is not equivocal. It is clearly negative. Essentially this evidence was grouped in four areas: (1) the enrollment in vocational education; (2) the match between this enrollment and employment patterns in the local labor market; (3) vocational guidance; and (4) the attitudes of male graduates of the vocational curriculum who attended comprehensive schools.

There was a major disparity between the number of young people who entered the labor market and the number who received vocational preparation. In the three cities studied, approximately one-third of the high school graduates entered college. The other two-thirds entered the labor market or took some form of non-baccalaureate training. Yet only 30 per cent of the tenth to twelfth grade enrollment—both male and female—received vocational preparation. If office occupations are excluded, the enrollment figure falls to seven per cent.

Not only was the proportion of these enrollments low, but it tended to be out of alignment with the occupational patterns of the labor markets in the three cities. Once again the office occupations programs were the exception. These programs had sizeable enrollments and there was a brisk demand for workers. In the other areas, however, there was little congruence. Distributive education showed the greatest imbalance. In all three cities clerks and salespeople comprised one of the largest proportions of the labor force. Yet, distributive education enrolled about two or three per cent of the vocational students, representing less than one per cent of the total student enrollment. This situation existed even though the distributive education programs received superior ratings. It seems that the imbalance may have been caused by factors beyond the control of the educators, such as the prevailing image that the only job that distributive education prepares one for is that of a dimestore clerk.

The technical and trade and industrial programs faced a different kind of problem. They attracted 10 per cent of the total male enrollment, and the labor markets in the three cities employed large numbers of these types of workers. But less than half of their graduates found jobs that were related to their training. The per cent who obtained related employment is, in itself, one of the most critical findings of this study.

Whether or not vocational education should attempt to meet *local* labor market needs is discussed in a later section. At this point it can be said that, using a standard that vocational educators have set for themselves and except for office occupations, vocational programs do not appear to be related to the needs of their communities.

The weaknesses in vocational guidance were noted both in the onsite evaluations and in the interviews of the graduates. Most counselors worked with an excessive number of students. And, though they were generally adequately prepared as counselors, they lacked specific preparation in vocational areas. Only about one-half of the vocational graduates recalled discussing their course choices with a counselor while about one-fourth recalled discussing job plans. The proportions of graduates of the academic and general curricula who received counseling were only a little higher. The implications of these figures are discussed in a separate section.

It was also found that a large percentage of male vocational graduates from comprehensive schools felt "looked-down on" because of the courses they took. Despite the strong wording of the question, approximately one-third of the vocational males who attended schools where they came in daily contact with the academic and general curriculum students admitted they felt "looked-down on." This finding has considerable importance for students who attend an area vocational-technical school on a part-time basis. This issue is also discussed in a separate section.

A New Direction for Vocational Education

Upon reviewing all the evidence presented above, as well as data from other studies, it is concluded that, given our limited educational resources, careful consideration should be given to the best use of these resources before a larger investment is made in vocational education in its traditional form. At the same time it is recognized that vocational education does have several desirable features that can be used to serve those students who are currently ignored by all curricula. What is needed is an organization of new vocational offerings that encourage the individuals to explore their own interests. Such an organization would acquaint young people with the nature of various types of occupations while at the same time it would offer them the opportunity for self-expression through other than verbal means.

It is therefore recommended that consideration be given to the reorientation of vocational education in this direction because:

(1) Of the large number of students who enter the labor force without any type of occupational preparation;

(2) Of the limited opportunities young people have to explore their vocational interests in the present labor market;

(3) Of changing technology which continually renders many types of skills obsolete;

(4) Of the evidence that less than one-half of the young men who study specific skills obtain jobs that used these skills;

(5) Of the ability requirements of many traditional vocational programs which exclude young people who need vocational preparation;

(6) Of the lack of stability in the specific vocational plans of young people—a vocational area may be predicted but specific occupations cannot;

(7) Graduates of trade and industrial programs tend to be hired by small employers who are becoming less numerous;

(8) The unique quality of vocational education has the potential to make school a more relevant experience, particularly for those students who are presently bored and frustrated by the abstract verbal orientation in most high school courses.

The sizeable proportion of students who do not enter the academic or the vocational curriculum has been documented. The general curriculum students do not, as a rule, *select* the general curriculum. Instead, they enter it through default. They may have been convinced by their previous school experiences that they are not "college material." They are unsure of their vocational interests and consequently unwilling to make a commitment to a particular vocational area. They drift through school taking undemanding academic courses and industrial arts courses. Schools do not know what to offer these students and the students realize it. If vocational education, besides offering its usual skill training programs, could develop new approaches, it could serve these young people well for it provides a different style of education.

The prevailing concept of the proper type of school dates back to the medieval style of formal higher education. The universities of that time were designed to meet the needs of the time. The scholars and scarce books were gathered in a few locations and students went to these locations to live and to study. During classes, the professor lectured and the students listened respectfully. At other times the students occupied themselves in individual reading and studying.

The conditions that produced this style of education have long since disappeared, but the tradition continues. Teachers are still expected to be skilled lecturers. Students are still supposed to sit quietly, ask interested questions, and acquire "knowledge" in its written and spoken forms. This model may serve the youngsters who are going on to college because it prepares them for the type of instruction they will receive there. But it is antithetical to the needs of other students who represent a majority.

The style of vocational education, at least in the shops, is just the opposite. The emphasis is on doing things which yield an intrinsic satisfaction of personal accomplishment. The instruction tends to be more individualized and a variety of media is employed. The ways of expressing oneself are not solely verbal. The atmosphere of the shop is more relaxed and the students may move about freely. And, perhaps most important, the student sees some relationship among the various subjects and between the curriculum and what he will eventually do in life. Here lies the real challenge to vocational educators: Can they adapt their style of education to serve the needs of a large proportion of youngsters who cannot or do not wish to meet the requirements of the academic and the traditional vocational curricula?

Some Experimental Programs. In some school systems experimental programs have been introduced with most of the features described above. A few illustrations are in order.

One, known as the "Richmond Plan," is being conducted in high schools in Richmond, California. Other school systems in California have also inaugurated this program. It is designed for those students who have the ability for the academic curriculum but who are not attracted to it. Many are considered poor students and some can be identified as potential dropouts.

The courses are organized so that the students can see the relationships among them. The interrelationship among the subjects has been described as follows:

> As an example of how the subjects are coordinated to reinforce each other, the study of heat taught in the physics class is related in mathematics instruction to first-degree equations (necessary for linear expansion), supported in the laboratory by the construction of ap-

paratus with which to conduct heat experiments and followed in English by oral and written reports on the subject.[2]

Another program, Project FEAST (Food Education and Service Technology), conducted in the San Francisco and other areas, attempts to bring about the same integration of courses in a less complex field. Business and English courses are coordinated with instruction in food preparation and cafeteria work. The program provides the student with the training required either for additional formal education or for immediate employment. It contains, as well, the features of cooperative work programs.

The strength of these programs lies in their efforts to integrate the various courses and elements in the curriculum and to relate them to future occupational goals. Both programs, however, provide training within rather limited fields and require some commitment to an occupation in that field. They do not maximize opportunities for exploration.

Is it possible to develop a curriculum that would provide training in general vocational skills and at the same time acquaint youngsters with the nature of various occupations? Research being conducted by the American Institutes for Research in Quincy, Massachusetts, suggests that it is possible.[3] Thirty-one representative occupations have been studied and, it is reported, "...an orderly domain of general vocational capabilities has been identified."[4] There appears to be an underlying continuum in this domain which is labeled hardware at one end and people at the other. Along this continuum, mechanical, electrical, spatial, chemical-biological, symbolic, and human relations skills are located. Each of these skill areas is represented in a number of occupations. Training in the various skills represented in these areas could provide both the basic skill acquisition and occupational familiarization that the vocationally undecided youngster requires.

The programs described above are experimental in nature. Hopefully, their evaluation will provide the data necessary to design a basic vocational curriculum. Educators, however, do not have to wait until all the experiments are completed and all the results are known. Almost every school is confronted with a sizeable group of students who are currently not profiting from their school experiences. They are called

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[2] Draper, D. C. *Educating for Work.* Washington, D. C.: The National Association of Secondary School Principals, 1967, pp. 44-45.

[3] Morrison, E. J. "General Vocational Skills and the Secondary Curriculum." In Quirk, Cathleen, and Sheehan, Carol (Eds.) *Research in Vocational and Technical Education.* Center for Studies in Vocational and Technical Education, The University of Wisconsin, 1967, pp. 57-82.

[4] *Ibid.* p. 69.

"reluctant learners" or "under-achievers." Most schools do little for such students. But with relatively small additional expenditures, or with a reallocation of existing expenditures, coupled with a real commitment to help these students, much can be done.

The city of Hudson, Ohio, provides an example of what can be done with a minimum of outside guidance and technical assistance.[5] Although 80 per cent of the graduates in the city of Hudson entered two- or four-year colleges, only about 30 per cent were completing college. It is reported that, "The remaining 20 per cent of our student body were enrolled in what we called a general course. It consisted of watered-down college preparatory courses, plus good industrial arts, home economics, and business education facilities."[6] The decision was made to do away with the general curriculum and to introduce a prevocational educational program. The following quotation describes the objective of the program:

> It is not our purpose to turn out skilled technicians—this is not practical, nor what industry wants—but to develop in our young people the interests, attitudes, and competencies which can be generalized to meet the changes of jobs, the technological developments, and the demands of mobility which every individual will encounter during his lifetime.[7]

To achieve this objective existing shop and laboratory facilities are used for occupational familiarization. A vocational information course is offered. Courses in sociology, career psychology, and family living are given to help the students understand themselves and others. In English courses, the textbooks and traditional materials have been replaced with experiences which stimulate word flow—both oral and written. The aim is to make the student want to express himself and to be less concerned with correct spelling and usage. The emphasis is always on the "here and now"—events which have personal relevance to the students.

The Hudson, Ohio, experience points in the direction of what can be done at a local level to serve those students usually neglected.

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[5] Benham, L. G. "The Need for Developing a New Kind of Vocational Program," and Pace, Mary P. "A Description of the Hudson, Ohio, Pilot Program in Vocational Education." In Scarbough, D. C., and Rogers, D. H. (Eds.) *Seminar on Planning, Developmental, and Related Programs in Occupational Education,* Center for Occupational Education, North Carolina State University at Raleigh, 1966, pp. 5-26.

[6] *Ibid.,* p. 8.

[7] *Ibid.* p. 17.

There are a number of features that characterize all of these special programs, though they may not all be present in each one. These include:

(1) They are nontraditional; that is, they do not fit into any of the usual areas of vocational education.

(2) They are interdisciplinary. The vocational area is used as a core content around which offerings in other nonvocational or related subjects are based. The teachers frequently plan and coordinate the content of their courses.

(3) They provide means, other than verbal, for self-expression and the opportunity for personal accomplishment.

(4) The primary function of the teacher is not to "teach" the student but rather to provide the conditions under which learning takes place. This puts greater emphasis on teacher planning and individualized learning and less emphasis on traditional "teaching."

(5) The course content is made relevant to the student's everyday life.

(6) The teaching of specific skills for a particular occupation is often not an end in itself. Rather, it is considered a "way of learning." The interest of the student in a particular occupation is a means, or vehicle, by which other traits, such as good work habits, the ability to follow instructions, to accept supervision, etc., are learned.

(7) There is a stress on flexibility both in the content of the program and in the options open to the student. The options can be either further training, formal or on-the-job, or immediate employment.

(8) Opportunities are provided for the students to explore the nature of various occupations and to obtain knowledge of their requirements.

These features yield the type of curriculum that is needed. It is one where the best features of vocational education are used to give the student general education. This proposed curriculum is not designed for a separate elite or for those students excluded from other courses. Rather than a separate body of knowledge to be taught, it is a way of making the educational experiences of the students more relevant.

In its 1968 report[8] the Advisory Council on Vocational Education recommended a "unified system of vocational education" that has many features similar to those advocated in the present report. The Council described 14 characteristics of such a system which are intended to meet the needs of "all students outside the college preparatory curriculum."

The system would extend from the elementary school through post high school. The curriculum would be of a spiral nature increasing in complexity and specificity at the higher level. At the high school level the emphasis would be on broad rather than specific training. While acquiring entry-level job skills, students would also be prepared for post-secondary education. The council agreed with the emphasis of this report—the need to make education relevant:

> Vocational preparation should be used to make general education concrete and understandable; general education should point up the vocational implications of all education. Curriculum materials should be prepared for both general and vocational education to emphasize these relationships.[9]

The Council makes a sharp distinction between general education and the general curriculum which they label "... a trap for those students who are not admissible either to the college preparatory or vocational curricula. . . ."[10]

In their major features the report of the Advisory Council and the present report are in essential agreement.

Related Issues in Vocational Education

Meeting Labor Market Needs. The evidence presented earlier indicated that, in most cases, vocational educators have not been able to design programs that match the labor market patterns in their local communities. This is not the fault of the educators. A variety of influences acts to prevent such a match. First, it is very difficult for employers to predict labor market needs at a local level, so the data necessary for statistical extrapolation are usually not available to the local educator. Changes, such as the departure or arrival of a major employer or a technological innovation, cannot be foreseen.

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[8] Advisory Council on Vocational Education, *Vocational Education: The Bridge Between Man and His Work*, Highlights and Recommendations, Publication 1, Washington, D. C., Department of Health, Education, and Welfare, Office of Education, 1968.

[9] *Ibid.* p. 75.

[10] *Ibid.* p. 54.

A second factor that makes it difficult to match offerings with local labor market needs is the perversity of people. Programs may be established for occupational areas of high need but students may not select these programs. The disparity between enrollment and employment in distributive education is an example. It will be recalled that the organization and operation of this program received superior evaluations.

A third factor is the lack of stability in the career plans of young people. The typical tenth grade student does not know what specific type of occupation he wants to follow, but he usually has an orientation either toward work or college. If his orientation is toward college, he follows the college preparatory track which prepares him to enter any college for which he has the ability to gain acceptance. The youngster with an orientation toward work is not so fortunate. He must select from a limited number of offerings which presumably have been established "to meet local labor market needs." In many cases he selects the program which is least unappealing. This may be part of the reason why more than 50 per cent of the male vocational graduates failed to obtain employment in jobs directly related to their training.

A fourth factor is the relatively high degree of geographic mobility of students. It is not unreasonable to assume that many students will seek jobs immediately or eventually in geographic areas away from their homes.

These factors combine to make attempts to match program enrollments and employment patterns at the local level a virtually impossible or unnecessary task. A more feasible approach would be to broaden the training programs so that young people are prepared to enter a variety of occupations.

The Comprehensive versus the Separate Vocational-Technical School. There is clear evidence in this study that many vocational students who attended comprehensive schools felt like second-class citizens. They thought that other students and teachers "looked-down on" them because they took vocational courses. These attitudes were almost absent among those students who attended separate vocational-technical schools.

This finding has many implications for the present expansion of vocational education in Pennsylvania. This expansion has taken the form of area vocational schools. In this type of school the students attend the area schools for a half-day, or some other period of time, and spend the other half of their time in their "home" or "sending" schools.

There are two main reasons for this type of arrangement. The first is the efficiency of having students from a number of different schools use the equipment that is located in one school. The savings in capital investment that this arrangement makes possible are obvious. The second is the wider variety of programs that can be offered. Drawing on students from several high schools allows an area vocational school to schedule programs that are not practical for any single school to offer.

These are valid arguments as vocational education is now organized. They stress, however, the wrong elements. First, they overlook the effects of the part-time arrangement on the student. This arrangement is the one which is most likely to make the student feel like an "outsider" in his home school. In the home school the student will take the courses in which he has the least interest and ability. The time spent in these courses will be for the most part boring because the student will see little of personal relevance. Since such academic subjects have little appeal, the student often does poorly in them. The student is thus put in a position in his home school which minimizes his opportunities for success and recognition in the classroom. Such a situation is quite conducive to a feeling of being "looked-down on." If the educators attempt to counteract such tendencies by limiting admission to the area school to an elite group, they will exclude the students who need occupational training the most.

Second, the area vocational school stresses specialized skills. It usually does not emphasize the type of occupational training which would have less stress on equipment and specific skills, and instead would give the student an understanding of mechanical principles, would enable him to follow an instruction manual, and would train him to use measuring instruments. These skills have broader application than training in the use of specific machines.

Third, too much emphasis is put on the offering of a wide variety of programs. Fewer but broader programs are needed. Many area vocational schools state that 30 or more skills will be taught. This is a commendable number but still falls far short of the number of vocational skills represented in a labor market of any size. Any number of specific offerings will always fall far short of employer needs. What is needed is less specific training and more general training—general in the best sense of being an integral part of the education of the student.

Less numerous programs would also have the advantage of facilitating exploration by students. It is obviously impractical for a student to explore 30 or more different programs, but it is possible to become acquainted with a limited number, each of which leads to a group of related occupations.

The Role of Counseling and Guidance. Far too many schools seem to give token recognition to guidance. Although it is difficult to determine the effectiveness of guidance, it does have the potential of being one of the most important influences to which a young person is exposed. This is because of its unique nature. The ideal guidance relationship takes place in a setting in which the emphasis is entirely on helping the student to become what he, personally, wants to become.

As the regression analysis showed, most of the identifiable factors that influence the choice of a high school curriculum are beyond the control of the student. They include such things as sex, IQ, and father's occupation. Social scientists have known for some time that the best predictor of the occupation a male will enter is the occupation of his father. Though our country strives to offer equal opportunity to everyone, the evidence indicates there is considerable inter-generation transfer of occupational, educational and economic status.

One of the specific responsibilities of guidance counselors is to attempt to break such inter-generation transfer. Guidance counselors should conceive of their role as assisting personal development. They should attempt to do this by providing a setting in which the individual explores his own interests and abilities with a concerned adult who does not attempt to influence the youngster towards what he, the adult, thinks is best. The counselor may well be the only adult who ever takes this role with a young person. Most other adults—parents, teachers, youth leaders—are advocates of particular interests. Parents want children to have what they never had; teachers want to develop the minds of students; youth leaders stress the goals of their own organizations. A counselor should assist the student to accept himself and his circumstances in life in a realistic manner, and to make plans which are based on these realities.

This model of guidance does not appear to be operating in the schools included in this study. The contact that the students had with counselors was generally considered helpful, but such contact was limited. The counselors' main functions seemed to be assigning students to various tracks and assisting seniors who seek acceptance into college. Little guidance along the lines suggested above was offered.

The reoriented style of vocational education which is advocated in this report would include the guidance function as an essential element. The stress is on broad occupational groupings so that a young person can explore the nature of various jobs. The opportunities for such exploration in the labor market have been increasingly restricted by legislation and by technological changes which have made it difficult for young people to obtain meaningful employment.

Together with the opportunity for exploration the school should provide courses on the nature of occupations. These courses could use the study of the interrelationships in society as the organizing variables. Basic concepts in economics and sociology could be taught together with the role requirements of a variety of occupations. Thus, the course would be closely related to what is now taught as social studies but would have greater relevance to the lives of the students.

More contact will be necessary between counselors and the students if true counseling relationships are to develop. While student-counselor ratios should be made more realistic, it is doubtful if enough counselors can be trained for several more years to significantly lower the ratio. Counselors, therefore, must rely more heavily on group counseling and must have more clerical assistance. Current developments in the application of computers to the guidance process might free some of the counselor's time. The audio-visual media and instant access provided by a computer may provide an additional bonus by being more suited to the learning styles of the students to whom the suggested form of vocational education is directed.

The Role of Vocational Education in Training Girls and Negroes. In a previous section the basic difference in the nature of vocational education for girls and boys was discussed. It was noted that vocational education for girls is essentially the office occupations programs. In the three cities studied, office occupations accounted for 39 per cent of the 43 per cent of girls in vocational programs. All other programs accounted for only four per cent of the vocational enrollment.

The success of the office occupations programs, in terms of all the usual criteria, tends to obscure the limitations imposed on the girl who expects to enter the labor force. She is told, in effect, that she can either prepare to be an office worker or receive no vocational preparation. The schools, in offering such limited preparation, are reflecting what society considers acceptable occupations for young girls. The girls, who are the product of this society, accept with little or no question what is offered. The real loser is society. The talents of many young girls are wasted in clerical jobs.

In a similar manner the cultural limitations on acceptable occupations for Negroes impoverish both the individuals who are restricted and the society which wastes their talents. There is evidence in this study, from the Negroes who were available to be interviewed, that they had benefited from their training to approximately the same degree as white graduates. Negroes were, however, under-represented in the sample. This led to the inference that Negroes are either being hired by the less progressive employers or they are not being hired at all.

This evidence confirms what can be found in any set of unemployment or income data. These figures in turn reflect centuries of social and economic discrimination towards the Negro. When discrimination continues for so many years, it affects the self-concepts of those involved. Many Negro youths are unwilling to prepare themselves for occupations where Negroes are not typically hired. Those that are willing to do so occasionally find their choices blocked by school officials who warn them of the problems involved, or by restrictive practices of unions and employers.

A new style of vocational education, discussed above, should tend to remove these limitations. It could widen the types of occupations deemed acceptable to girls and Negroes. The selection of a vocational program would not involve a commitment to a specific occupational area. Instead, it would afford the students the opportunity to explore a number of areas and to find out if the skills required and the work involved are compatible with their interests and abilities. This exploration, coupled with improved counseling and guidance, should serve to overcome the cultural stereotypes of what constitute acceptable jobs.

Recommendations

On the basis of these findings and conclusions, certain specific recommendations are made below. The rationale for each has been presented in this chapter. These recommendations point to the role that vocational education can play in the development of a curriculum that would meet the needs of a majority of the youngsters enrolled in school. These recommendations are made with the realization that, if they are to be implemented, vocational education must be conceived of in a much broader context. The expansion is necessary, however, if the special features of vocational education are to be made available to a majority of students.

1. Vocational education should develop programs which are oriented toward training in broad, general skills that can be applied in a variety of occupations.
2. These new programs should be aimed at the large proportion of students who see little of personal relevance in either the traditional vocational curriculum or the academic curriculum.
3. The main emphasis of these new programs should be on using the special features of vocational education to bring meaning and interest to the learning experience.
4. The new programs of vocational education should provide opportunities for occupational exploration and familiarization as an integral part of the curriculum.

5. Vocational guidance should be expanded in a number of directions. It should begin in the elementary school to orient youngsters for their experiences in the newer programs of occupational education. In both the junior and senior high schools courses in the nature of occupations should supplement vocational courses. To free more of the counselor's time for student contact, greater reliance should be placed on group counseling, technological innovations, and clerical assistance.
6. Secondary schools should not be primarily concerned with matching their offerings to local labor market needs. The emphasis instead should be on broad training that can be used in a variety of occupations in many labor market areas.
7. The Commonwealth is apparently committed to the development of area vocational schools. In light of this commitment, policies should be established that attempt to make the students who attend these schools feel fully accepted in their home schools. Greater efforts should be made toward the development of new, broader programs in which the vocational programs are carefully coordinated with the academic programs of the "sending" schools.

The implementation of these recommendations requires, first, an acceptance by communities and their educational leaders of the importance of providing broader occupational training for youth who do not go on to college. Although community acceptance is not easy to achieve, this should be a challenge to the educational administrator.

Second, it is essential that school boards, at both the state and local levels, re-examine the use of resources in the school systems to determine whether or not these resources are being employed in the most efficient manner in relation to the needs and interests of the students. This might result in a re-allocation of funds from academic to occupational training.

Third, a re-examination of teacher training, in general, and the training of teachers of vocational education and industrial arts, in particular, would appear to be in order. To what extent do these programs for teacher training provide the basis for an understanding of the large group of students to whom schools' offerings are today not relevant? To what extent are these teacher training programs providing the basis for the curriculum development along the lines being recommended in this report?

In general, it is recommended that communities, school boards, educational administrators, and schools of education reorient themselves toward a curriculum which is realistic and relevant in terms of the needs and interests of students.

APPENDIX A

MULTIPLE REGRESSION ANALYSES

The multiple regression equations in this appendix include both quantitative and qualitative variables. The qualitative variables were coded into a categorical format. To code a qualitative variable into a categorical or dummy variable set, it is divided into mutually exclusive categories. These categories can only be coded "0" or "1." A "0" code means the respondent does not fit this category. A "1" code means he is one of the category. The number of categories used depends on the nature of the variable. In this study curriculum was divided into the four categories of academic, general, general business, and vocational. Each of these became a separate variable in the curriculum dummy set. More precise categories, such as specific vocational programs, could have been set up, but these were not feasible.

Multiple regression analysis is used to measure and to test the net effect of the independent variables on the dependent variable, holding the effects of other independent variables in the equation constant. The partial regression coefficient of each independent variable is a measure of the net effect of a given variable on the dependent variable. To test the statistical significance of the coefficient a *t*-test is used.

Regression analysis is also used to identify the relationships among variables. In other words, this method helps to explain the variations of the dependent variable by including the variations of the independent variables in the regression equation. The fraction of explained variance (R^2) indicates the percentage of variation in the dependent variable that can be attributed to variations in all of the independent variables in the equation.

Due to the qualitative nature of some of the data, dummy variables are used in the following regression analysis. Within each set of dummy variables, one element of the set is eliminated and this element enters into the intercept of the equation. Therefore, in each set, the respective partial regression coefficients are interpreted as deviations from the eliminated variable.

To calculate the tables in this appendix it was necessary to remove from the sample all respondents with incomplete data. Hence, the number of observation is lower in these tables than in the cross-tabulation tables.

It was also decided to separate the general business curriculum from the regular general curriculum. This decision was caused by the 83 per cent female respondents in the general business curriculum. The other curricula had approximately equal male-female ratios but the general business curriculum was heavily disproportionate. For this reason it was handled separately. The criterion for separating general business from vocational business preparation was whether or not shorthand was taken. If shorthand was included, the training was considered vocational.

Table A-1. Multiple Regression of Listed Variables on Curriculum Choice

Variables	Vocational	General Business[a]	General	Academic
	Partial regression coefficients and ( ) standard errors of coefficients			
IQ				
110 or more (high)	–.14**	.06	–.07	.14**
	(.05)	(.05)	(.04)	(.03)
90 - 109 (average)	–.03	.05	–.04	.02
	(.05)	(.04)	(.03)	(.03)
89 or less (low)	I	I	I	I
Sex				
Male	.18**	–.21**	–.00	.03
	(.03)	(.02)	(.02)	(.02)
Female	I	I	I	I
Race				
White	–.07	.15**	–.03	–.05
	(.06)	(.05)	(.04)	(.04)
Non-white	I	I	I	I
Father's Occupation				
Professional, managerial and technical	–.05	–.04	.01	.08*
	(.06)	(.05)	(.04)	(.04)
Clerical & sales	–.15*	.08	.04	.03
	(.07)	(.06)	(.05)	(.04)
Service	I	I	I	I
Specific skills	–.05	.02	.03	–.00
	(.06)	(.05)	(.04)	(.04)
Nonspecific skills	–.05	.02	.04	–.01
	(.05)	(.05)	(.04)	(.03)
Father's Education				
College	–.08	.00	–.02	.09*
	(.06)	(.05)	(.05)	(.04)
High school	–.06*	.06*	–.03	.03
	(.03)	(.03)	(.03)	(.02)
Grade school	I	I	I	I

Table A-1. (Con't)

Why Chose Courses				
Further education	-.37** (.04)	-.12** (.03)	-.06* (.03)	.55** (.03)
Prepare for job	.05 (.03)	.16** (.03)	-.14** (.02)	-.07** (.02)
Interest	I	I	I	I
Fraction of Explained Variance	.12	.16	.03	.38
Multiple Correlation Coefficient[b]	.35**	.40**	.17**	.62**
Intercept	.63	.04	.26	.07

Number of observations 1,226 (all curricula)

Notes:

I = This element of the set was entered into the intercept value. In each set, the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] For the multiple regression analyses General Business, because of the 83 per cent female enrollment, was separated from the regular general curriculum.

[b] Corrected for number of observations and variables in the equation.

* Significant at .05 level.

** Significant at .01 level.

Table A-2. Multiple Regression of Listed Variables on First Job Starting Pay

Variable	Statistics	
	Partial Regression Coefficient	Standard Error of Coefficient
City		
Small	I	I
Medium size	3.94**	1.06
Large	6.06**	1.21
IQ		
89 or below (low)	I	I
90 - 109 (average)	3.07*	1.54
110 or above (high)	4.24*	1.77
Curriculum		
Academic	I	I
General	-3.94*	1.60
General business[a]	-2.30	1.59
Vocational	-2.39	1.34
Sex		
Female	I	I
Male	6.41**	.98
Race		
Non-white	I	I
White	.93	1.98
First Job Occupation		
Service	I	I
Semiprofessional & managerial	6.77**	2.42
Clerical & sales	3.05	1.98
Specific trades	7.50**	2.43
Nonspecific trades	8.96**	2.00
Post H.S. Training		
No training	I	I
Took training	2.25	1.44
Training Relatedness		
Unrelated	I	I
Somewhat related	1.70	1.17
Highly related	2.58*	1.20
Number of Observations	1,226	
Mean of Dependent Variable	52.8	
Standard Deviation	15.7	
Fraction of Explained Variance	.10	
Multiple Coefficient of Correlation[b]	.32**	
Intercept	38.5	

Notes:

I = This element of the set was entered into the intercept value. In each set, the respective partial regression coefficients are interpreted as deviation from the intercept.

[a] For the multiple regression analysis General Business, because of the 83 per cent female enrollment, was separated from the general curriculum.

[b] Corrected for number of observations and variables in the equation.

* Significant at .05 level.

** Significant at .01 level.

Table A-3. Multiple Regression of Listed Variables on Per Cent of Time Employed

Variables	Statistics	
	Partial Regression Coefficient	Standard Error of Coefficient
City		
Small	I	I
Medium size	3.56*	1.73
Large	9.98**	1.98
IQ		
89 or below (low)	I	I
90 to 109 (average)	1.30	2.52
110 or above (high)	2.43	2.89
Curriculum		
Academic	I	I
General	.56	2.60
General business[a]	6.11*	2.59
Vocational	5.69**	2.19
Sex		
Female	I	I
Male	6.55**	1.60
Race		
Non-white	I	I
White	5.05	3.23
First Job Occupation		
Professional, managerial, technical	3.25	3.94
Clerical & sales	6.42*	3.23
Service	I	I
Specific skills	1.00	3.96
Nonspecific skills	1.76	3.27
Post H.S. Training		
No training	I	I
Training	-17.21**	2.35
Training Relatedness		
Unrelated	I	I
Somewhat related	.53	1.91
Highly related	7.02**	1.95

Number of Observations	1,226
Mean of Dependent Variable	70.8
Standard Deviation of Dependent Variable	23.9
Fraction of Explained Variance	.12
Multiple Coefficient of Correlation[b]	.35**
Intercept	53.18

Notes:

I = This element of the set enters into the intercept value. In each set, the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] For the multiple regression analysis General Business, because of the 83 per cent female enrollment, was separated from the regular curriculum.

[b] Corrected for number of observations and variables in the equation.

* Significant at .05 level.

** Significant at .01 level.

Table A-4. Multiple Regression of Listed Variables on Earnings Progression

	Statistics	
Variables	Partial Regression Coefficient	Standard Error of Coefficient
City		
Small	I	I
Medium size	17.14**	3.54
Large	3.35	4.10
IQ		
89 or below (low)	I	I
90 - 109 (average)	4.15	5.11
110 or above (high)	9.46	5.90
Curriculum		
Academic	I	I
General	4.27	5.28
General business[a]	5.68	5.27
Vocational	10.06*	4.44
Sex		
Female	I	I
Male	20.84*	3.33
Race		
Non-white	I	I
White	3.12	6.54
First Job Occupation		
Professional, managerial, technical	15.40	8.02
Clerical & sales	-.53	6.56
Service	I	I
Specific skills	11.12	8.04
Nonspecific skills	8.19	6.68
Year of Graduation	1.47	.95
Post H.S. Training		
No training	I	I
Training	5.14	4.86
Training Relatedness		
Highly related	2.79	3.99
Somewhat related	-4.34	3.88
Unrelated	I	I
Starting Pay	-.64**	-.10
Per Cent of Time Employed	-.12*	-.06
Number of Observations	1,226	
Mean of Dependent Variable	35.1	
Standard Deviation of Dependent Variable	51.5	
Fraction of Explained Variance	.10	
Multiple Coefficient of Correlation[b]	.32**	
Intercept	39.95	

Notes: I = This element of the set enters into the intercept value. In each set, the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] For the multiple regression analysis General Business, because of the 83 per cent female enrollment, was separated from the regular curriculum.

[b] Corrected for number of observations and variables in the equation.

* Significant at .05 level. ** Significant at .01 level.

Table A-5. **Multiple Regression of Listed Variables on Average Monthly Earning**

Variables	Statistics: Partial Regression Coefficient	Statistics: Standard Error of Coefficient
City		
Small	I	I
Medium size	32.96**	6.95
Large	40.18**	7.97
IQ		
89 or below (low)	I	I
90 - 109 (average)	-.07	10.05
110 or above (high)	4.69	11.59
Curriculum		
Academic	I	I
General	4.59	10.39
General business[a]	20.78*	10.33
Vocational	22.77**	8.72
Sex		
Female	I	I
Male	43.86**	6.50
Race		
Non-white	I	I
White	21.62	12.86
First Job Occupation		
Professional, managerial, technical	22.08	15.77
Clerical & sales	25.65*	12.89
Service	I	I
Specific skills	31.34*	15.82
Nonspecific skills	18.86	13.13
Post H.S. Training		
No training	I	I
Took training	-61.38**	9.36
Year of Graduation	13.56**	1.86
Training Relatedness		
Highly related	31.82**	7.80
Somewhat related	-.18	7.63
Unrelated	I	I

Number of Observations	1,226
Mean of Dependent Variable	227.36
Standard Deviation of Dependent Variable	110.41
Fraction of Explained Variance	.24
Multiple Coefficient of Correlation[b]	.49**
Intercept	54.36

Notes:

I = This element of the set was entered into the intercept value. In each set, the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] For the multiple regression analysis General Business, because of the 83 per cent female enrollment, was separated from the regular general curriculum.

[b] Corrected for number of observations and variables in the equation.

* Significant at .05 level.

** Significant at .01 level.

APPENDIX B

COST-EFFECTIVENESS ANALYSIS

This appendix examines the criteria for determining when an investment in education yields positive returns. Three analytical techniques are applied to the data which were obtained from graduates sampled in one large city. For the 1960 graduates, for whom both marginal costs and average marginal benefits were available, the expected internal rate of return and the present value are calculated. For the 1962 graduates, for whom no cost data were available for this city, the net annual benefits rule is used to estimate a level stream of benefits which can be compared to probable costs.

It is important to note that these criteria are useful only as another measure of "success." There are many assumptions involved when investment criteria are applied to education. One major assumption is that the average (marginal) benefits continue, at the same level, over the working life of the individual. Whether or not this is a valid assumption must be tested by further research. However, this analysis represents a useful application of investment criteria and deserves consideration when evaluating investment in education.

Average Marginal Costs

The marginal costs of vocational education were $553 per year for each of the three years of senior high school for the 1960 graduates. These were the marginal costs of vocational education and were obtained from the records of the school system.

Average Marginal Benefits

The average marginal benefits were estimated from a regression analysis of the work experiences of respondents from each graduating class from 1960 to 1964. In two of these five classes the vocational graduates had significantly higher average monthly earnings. These were the classes of 1960 and 1962. In the other three classes the earnings of the vocational graduates were also higher but not at a statistically significant level. When all classes were combined, the earnings of the vocational graduates were significantly higher. The regression analyses are limited to the classes of 1960 and 1962. Their average monthly earnings are shown in Tables B-1 and B-2. The 1960 analysis covered five years of work experience and the 1962 analysis covered three years. The difference between the earnings of the vocational graduates and the other graduates represents the net additional amount of annual income that the vocational graduates received over and above the average income of all of the other graduates.

Table B-1. Multiple Regression of Listed Variables on Dollars Per Month of 1960 Graduates

	Statistics	
Variable	Partial Regression Coefficient	Standard Error of Coefficient
IQ		
89 or below (low)	I	I
90 - 109 (average)	62.21	59.93
110 or above (high)	20.73	77.07
Curriculum		
All others	I	I
Vocational	69.79*	32.35
Sex		
Female	I	I
Male	130.34**	32.36
Race		
Nonwhite	I	I
White	19.81	29.66
First Job Occupation		
Service	I	I
Prof. and managerial	92.32	60.38
Clerical and sales	150.51**	53.69
Specific skills	91.66	74.31
Nonspecific skills	102.62	64.08
Father's Education		
Grade school	I	I
High school	17.00	24.44
College	–26.04	34.43
Post High School Training		
Did not take training	I	I
Took training	–20.99	38.56
Training Relatedness		
Unrelated or somewhat	I	I
Highly	–18.03	29.63
Number of Observations	65	
Mean of Dependent Variable	279.20	
Standard Deviation	108.66	
Fraction of Explained Variance	.27	
Multiple Coefficient of Correlation[a]	.52**	
Intercept	–3.41	

Notes:

I = This element of the set was entered into the intercept value. In each set the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] Corrected for number of observations and variables in the equation.

* Significant at the .05 level.

** Significant at the .01 level.

Table B-2. Multiple Regression of Listed Variables on Dollars Per Month of 1962 Graduates

	Statistics	
Variable	Partial Regression Coefficient	Standard Error of Coefficient
IQ		
89 or below (low)	I	I
90 - 109 (average)	132.51*	57.39
110 or above (high)	172.68**	63.98
Curriculum		
All others	I	I
Vocational	50.88*	19.92
Sex		
Female	I	I
Male	86.20*	27.67
Race		
Nonwhite	I	I
White	29.20	30.91
First Job Occupation		
Service	I	I
Prof. and managerial	-29.44	81.44
Clerical and sales	-1.16	79.41
Specific skills	I[b]	I[b]
Nonspecific skills	-17.97	79.57
Father's Education		
Grade school	I	I
High school	30.07	22.38
College	20.15	27.82
Post High School Training		
Did not take training	I	I
Took training	-57.45*	28.49
Training Relatedness		
Unrelated or somewhat	I	I
Highly	29.39	22.48
Number of Observations	65	
Mean of Dependent Variable	235.69	
Standard Deviation	89.31	
Fraction of Explained Variance	.26	
Multiple Coefficient of Correlation[a]	.51**	
Intercept	13.67	

Notes:

I = This element of the set was entered into the intercept value. In each set the respective partial regression coefficients are interpreted as deviations from the intercept.

[a] Corrected for number of observations and variables in the equation.

[b] Because of absence of observations in this category, it also is in the intercept.

* Significant at the .05 level.

** Significant at the .01 level.

To evaluate the cost-effectiveness of the vocational curriculum the differences found for the vocational graduates are assumed to continue for their entire working lives. The period for evaluating the curriculum thus covers a 50 year span. The costs are incurred in the first three years and the benefits are obtained in the remaining 47 years. These assumptions must be made if the calculations described in the following sections are to be made. Whether or not these assumptions reflect accurately the actual experiences of the graduates should be determined by additional research.

The average annual marginal benefits were $838 for the 1960 graduates. This means that, on the average after holding the effects of sex, race, IQ, etc. constant, the vocational graduates made $838 a year more than graduates from all the other curricula. Using the calculated standard deviation, it can be said that about two-thirds of all the vocational graduates received average marginal benefits of between $449 and $1,226. The investment criterion is applied to the upper and lower bounds, as well as to the average, to reflect the possible range of returns.

Present Value—1960

The present value decision rule may be stated as follows: Adopt any project for which the present value of the stream of benefits less the present value of the stream of costs, both discounted at the appropriate interest rate, is greater than zero.

Generally speaking the present value or discounted value is computed by:

$$\text{P.V. (Benefits)} = \frac{b_1}{(1+i)^1} + \frac{b_2}{(1+i)^2} + \cdots + \frac{b_n}{(1+i)^n}$$

$$\text{P.V. (Costs)} = \frac{c_1}{(1+i)^1} + \frac{c_2}{(1+i)^2} + \cdots + \frac{c_n}{(1+i)^n}$$

where *b* is the marginal benefit and *c* is the marginal cost occurring in each year. The interest rate used to discount is *i* while the number of years of the flow is *n*.

Present value is used to bring the flow of costs or benefits which occur through varying time periods to a common base of comparison. By use of the discount rate, relative weights are given to the cost-benefit time patterns in order to account for the productivity of investment, positive time preference and risk.[1]

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[1] Stromsdorfer, Ernst W., *A Developmental Program for an Economic Evaluation of Vocational Education in Pennsylvania*, Institute for Research on Human Resources, The Pennsylvania State University, 1966, p. 73.

For all practical purposes size of the interest rate used to discount is mainly a matter of personal judgment. Because of the various abstract concepts that the rate represents as well as institutional and measurement problems there is no optimal discount rate which can be used for any given situation. Most acceptable rates fall between 4 and 10 per cent, with a few writers advocating even higher rates. In finding the present values of the costs and benefits for the 1960 graduates both a 6 per cent and a 10 per cent discount rate were used. The higher rate provides a more strict test for judging a program because the weighting factor makes the stream of benefits which occurs in the more distant future relatively smaller than does a lower rate.

Tables B-5 through B-10 (at the end of this appendix) reflect the present values for each of the three levels of average marginal benefits at the two discount rates. These values are summarized in Table B-3. According to the present value rule the analysis strongly supports the vocational program, since in all cases the present value of the benefits less the present value of the costs is positive. Even at the highest discount rate and the lowest level of benefits, the present value of the benefits over the 47 year work life exceeds the three year costs by $1,960.

Table B-3. Summary of the Present Value Analysis of 1960 Graduates

		Present value of stream discounted at 6%	Present value of stream discounted at 10%
	Costs: Over 3 years	$ 1,478	$1,376
Mean Marginal Benefits = $838	Benefits: over 47 years	10,923	6,227
Mean Marginal Benefits—1 S.D. = $449	Benefits: over 47 years	5,881	3,336
Mean Marginal Benefits+1 S.D. = $1,226	Benefits: over 47 years	16,045	9,108

In each of the six tables a cumulative total is presented, reflecting the sum of benefits through a given year. These tables make it possible to observe the present value of benefits for any number of years if one would want to measure the effect of a shorter period in which the incomes of the graduates differed.[2]

It should be noted that the cumulative total of the discounted benefits exceeds the discounted costs after a relatively few years. If one wishes to be quite conservative, the income advantage of vocational graduates can be projected for a short period at the higher discount rate and lower marginal benefit. These data are shown in Table B-10.

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[2] There is evidence from another study in progress at the Institute for Research on Human Resources that vocational graduates have an income advantage in the years immediately following high school but this advantage tends to disappear after about six years. This finding is contrary to the evidence in these data. Some possible reasons for this difference are discussed in the Technical Note at the end of this appendix.

Under these conditions, graduates of the vocational curriculum would have to have extra earnings for five and one-half years to justify the extra costs of their training. Since the data actually covered a five-year period, it seems very likely vocational education did have a positive return.

Expected Internal Rate of Return—1960 Data

The expected internal rate of return for any project is expressed in terms of a percentage. This percentage is equal to the interest rate which makes the present value of costs exactly equal to the present value of the benefits. The expected internal rate of return can be used as a decision criterion in two ways. The first way is to compare two or more projects, each having a different flow of costs and benefits, to determine which will yield the larger return. The second is to compare the obtained rate to a predetermined rate of return to judge the desirability of the project within a framework that has already been established.

It is important to keep in mind the relative weakness of the expected internal rate of return as a decision making criterion when compared to the present value method. The expected internal rate of return provides a concise measure of return to a project and is valuable in this respect. However, this criterion will not necessarily yield a decision which results in maximization of total net present value of benefits.[3]

There are various methods of measuring the expected internal rate of return as it has been defined. Jacob Mincer uses the following approach:[4]

$$c \cdot \sum_{n=1}^{t} \frac{1}{(1+r)^n} = b \cdot \sum_{n=t+1}^{\infty} \frac{1}{(1+r)^n}$$

where c = cost per period
b = benefits per period
t = time periods of training
n = number of time periods
r = expected internal rate of return

This equation can be simplified for easy calculation if two assumptions are made. First, costs must be assumed to be constant during the training period and, second, benefits must be assumed to be constant and to extend to infinity. The expected internal rate of return can then be found using the following equation given by Mincer.[5]

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[3] *Ibid.* p. 85.

[4] Mincer, Jacob, "On-the-job Training: Costs, Returns and Some Implications," *Journal of Political Economy Supplement*, October 1962, p. 64.

$$r = (1 + b/c)^{1/t} - 1$$

where t = periods of training
b = benefits per period
c = cost per period
r = expected internal rate of return

Applying this formula to the data obtained from the 1960 graduates the following results:

$$\begin{aligned} r &= \left(1 + \frac{837}{553}\right)^{1/3} - 1 \\ &= 1.36 - 1 \\ &= .36 \end{aligned}$$

Thus, the internal rate of return is 36 per cent.

Annual Net Benefits—1962 Data

Because cost data were not available for the 1962 graduates the annual net benefit rule is extremely useful. By use of this rule an annual level stream of benefits can be estimated which can be compared to various levels of annual costs which are likely to occur.[6]

The decision rule is stated as follows: select all projects where the annual level average stream of benefits exceeds the annual level average stream of costs with the same duration.

The formula for finding the annual level stream of costs or benefits is as follows:

$$s = \frac{V_o\, i\, (1+i)^n}{(1+i)^n - 1}$$

where $V_o = s' \dfrac{(1+i)^n - 1}{i(1+i)^n}$ and

where: s' = observed annual benefit stream or observed annual cost stream
s = level annual stream of costs or benefits

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[5] *Ibid.* p. 64.

[6] Hirshleifer, Jack, *et al.*, *Water Supply: Economics, Technology, and Policy*, (Chicago: University of Chicago Press, 1960), pp. 154-156. Most of this section is based on Hirshleifer.

i = discount rate
n = number of periods
V_o = present value of cost or benefit stream

The 1962 observed annual benefits, or average marginal benefits, of vocational education are \$611. Assuming a 6 per cent discount rate and a working life of 47 years after graduation the present value of benefits, or V_o, equals \$7,931. Entering this value into the formula for annual flow of benefits yields the following result:

$$s = \frac{V_o\, i\, (1+i)^n}{(1+i)^n - 1}$$

$$s = 7{,}931 \frac{(.06)\ (1.06)^{50}}{(1.06)^{50} - 1}$$

$$s = \$503$$

This amount is, therefore, the annual level stream of benefits flowing from the vocational program. According to the decision rule one would select this project if the annual level stream of costs for the same duration as benefits were less than \$503. Table B-4 shows the annual level stream of benefits for 1962 at both the 6 and 10 per cent discount rates and for observed flows one standard deviation above and below the mean of obtained money benefits.

Table B-4. Summary of Annual Level Benefits of 1962 Graduates

	Annual level stream at 6% discount:	Annual level stream at 10% discount:
Marginal average benefits = \$611	\$503	\$454
Marginal average benefits = \$850	\$700	\$632
Marginal average benefits = \$372	\$306	\$290

The annual net benefits rule will provide the same answers as the present-value rule. However, the advantage of the annual net marginal benefits rule in this case is that it provides levels of annual values against which marginal costs, which must be estimated, can be compared.

The implications of these analyses are discussed in Section III, Chapter 7.

Table B-5. Present Value of 1960 Graduates' Marginal Costs and Benefits Projected Over Their Working Lives at 6 Per Cent Discount Rate

Costs = $553
Benefits = $838

Yr.	Annual Cost	Cumulative Total
1	522	522
2	492	1,014
3	464	1,478

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals
4	664	664
5	626	1,290
6	591	1,881
7	557	2,438
8	526	2,964
9	496	3,460
10	468	3,928
11	442	4,370
12	417	4,787
13	393	5,180
14	371	5,551
15	350	5,901
16	330	6,231
17	311	6,542
18	294	6,836
19	277	7,113
20	261	7,374
21	247	7,621
22	233	7,854
23	219	8,073
24	207	8,280
25	195	8,475
26	184	8,659
27	174	8,833
28	164	8,997

Yr.	Annual Benefits	Cumulative Totals
29	155	9,152
30	146	9,298
31	138	9,436
32	130	9,566
33	123	9,689
34	116	9,805
35	109	9,914
36	103	10,017
37	97	10,114
38	92	10,206
39	86	10,292
40	81	10,373
41	77	10,450
42	73	10,523
43	68	10,591
44	65	10,656
45	61	10,717
46	57	10,774
47	54	10,828
48	51	10,879
49	48	10,927
50	46	10,973

Table B-6. Present Value of 1960 Graduates' Marginal Costs and Benefits Projected Over Their Working Lives at 10 Per Cent Discount Rate

Costs = $553
Benefits = $838

Yr.	Annual Cost	Cumulative Total
1	503	503
2	457	960
3	416	1,376

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals	Yr.	Annual Benefits	Cumulative Totals
4	572	572	29	53	5,768
5	520	1,092	30	48	5,816
6	473	1,565	31	44	5,860
7	430	1,995	32	40	5,900
8	391	2,386	33	36	5,936
9	355	2,741	34	33	5,969
10	323	3,064	35	30	5,999
11	294	3,358	36	27	6,026
12	267	3,625	37	25	6,051
13	243	3,868	38	22	6,073
14	221	4,089	39	20	6,093
15	201	4,290	40	18	6,111
16	182	4,472	41	17	6,128
17	166	4,638	42	15	6,143
18	151	4,789	43	14	6,157
19	137	4,926	44	13	6,170
20	125	5,051	45	12	6,182
21	113	5,164	46	11	6,193
22	103	5,267	47	10	6,203
23	94	5,361	48	9	6,212
24	85	5,446	49	8	6,220
25	77	5,523	50	7	6,227
26	70	5,593			
27	64	5,657			
28	58	5,715			

Table B-7. Present Value of 1960 Graduates' Marginal Cost and Benefits Projected Over Their Working Lives at 6 Per Cent Discount Rate. (One Standard Deviation Above Mean)

Costs = $553
Benefits = $1,226

Yr.	Annual Cost	Cumulative Total
1	522	522
2	492	1,014
3	464	1,478

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals
4	971	971
5	916	1,887
6	864	2,751
7	815	3,566
8	769	4,335
9	726	5,061
10	685	5,746
11	646	6,392
12	609	7,001
13	575	7,576
14	542	8,118
15	511	8,629
16	483	9,112
17	455	9,567
18	430	9,997
19	405	10,402
20	382	10,784
21	361	11,145
22	340	11,485
23	321	11,806
24	303	12,109
25	286	12,395
26	270	12,665
27	254	12,919
28	240	13,159
29	226	13,385
30	213	13,598
31	201	13,799
32	190	13,989
33	179	14,168
34	169	14,337
35	160	14,497
36	150	14,647
37	142	14,789
38	134	14,923
39	126	15,049
40	119	15,168
41	112	15,280
42	106	15,386
43	100	15,486
44	94	15,580
45	89	15,669
46	84	15,753
47	79	15,832
48	75	15,907
49	71	15,978
50	67	16,045

Table B-8. Present Value of 1960 Graduates' Marginal Cost and Benefits Projected Over Their Working Lives at 10 Per Cent Discount Rate. (One Standard Deviation Above Mean)

Costs = $553
Benefits = $1,226

Yr.	Annual Cost	Cumulative Total
1	503	503
2	457	960
3	416	1,376

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals
4	837	837
5	761	1,598
6	692	2,290
7	629	2,919
8	572	3,491
9	520	4,011
10	473	4,484
11	430	4,914
12	391	5,305
13	355	5,660
14	323	5,983
15	293	6,276
16	267	6,543
17	242	6,785
18	220	7,005
19	201	7,206
20	182	7,388
21	166	7,554
22	151	7,705
23	137	7,842
24	124	7,966
25	113	8,079
26	103	8,182
27	94	8,276
28	85	8,361
29	77	8,438
30	70	8,508
31	64	8,572
32	58	8,630
33	53	8,683
34	48	8,731
35	44	8,775
36	40	8,815
37	36	8,851
38	33	8,884
39	30	8,914
40	27	8,941
41	25	8,966
42	22	8,988
43	20	9,008
44	19	9,027
45	17	9,044
46	15	9,059
47	14	9,073
48	13	9,086
49	12	9,098
50	10	9,108

Table B-9. Present Value of 1960 Graduates' Marginal Costs and Benefits Projected Over Their Working Lives at 6 Per Cent Discount Rate. (One Standard Deviation Below Mean)

Costs = $553
Benefits = $449

Yr.	Annual Cost	Cumulative Total
1	522	522
2	492	1,014
3	464	1,478

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals
4	356	356
5	336	692
6	317	1,009
7	299	1,308
8	282	1,590
9	266	1,856
10	251	2,107
11	237	2,344
12	223	2,567
13	210	2,777
14	199	2,976
15	187	3,163
16	177	3,340
17	167	3,507
18	157	3,664
19	148	3,812
20	140	3,952
21	132	4,084
22	125	4,209
23	118	4,327
24	111	4,438
25	105	4,543
26	99	4,642
27	93	4,735
28	88	4,823
29	83	4,906
30	78	4,984
31	73	5,057
32	70	5,127
33	66	5,193
34	62	5,255
35	58	5,313
36	55	5,368
37	52	5,420
38	49	5,469
39	46	5,515
40	44	5,559
41	41	5,600
42	39	5,639
43	37	5,676
44	35	5,711
45	33	5,744
46	31	5,775
47	29	5,804
48	27	5,831
49	26	5,857
50	24	5,881

Table B-10. Present Value of 1960 Graduates' Marginal Costs and Benefits Projected Over Their Working Lives at 10 Per Cent Discount Rate. (One Standard Deviation Below Mean)

Costs = $553
Benefits = $449

Yr.	Annual Cost	Cumulative Total
1	503	503
2	457	960
3	416	1,376

Discounted Annual Benefits

Yr.	Annual Benefits	Cumulative Totals	Yr.	Annual Benefits	Cumulative Totals
4	306	306	29	28	3,090
5	279	585	30	26	3,116
6	254	839	31	23	3,139
7	230	1,069	32	21	3,160
8	210	1,279	33	19	3,179
9	190	1,469	34	18	3,197
10	173	1,642	35	16	3,213
11	157	1,799	36	15	3,228
12	143	1,942	37	13	3,241
13	130	2,072	38	12	3,253
14	118	2,190	39	11	3,264
15	108	2,298	40	10	3,274
16	98	2,396	41	9	3,283
17	89	2,485	42	8	3,291
18	81	2,566	43	8	3,299
19	73	2,639	44	7	3,306
20	67	2,706	45	6	3,312
21	61	2,767	46	6	3,318
22	55	2,822	47	5	3,323
23	50	2,872	48	5	3,328
24	46	2,918	49	4	3,332
25	41	2,959	50	4	3,336
26	38	2,997			
27	34	3,031			
28	31	3,062			

TECHNICAL NOTE TO APPENDIX B

In general, the evidence in this study suggests that initially there is no earnings advantage for the vocational graduates but after a few years such an advantage begins to appear. There is, however, evidence from another study in progress at the Institute for Research on Human Resources[7] that vocational graduates have an income advantage in the years immediately after high school but this advantage tends to disappear after about six years.

A number of differences in the methodologies of the two studies may account for the differences in the results. First, the two studies used different samples, somewhat different sampling techniques, and different methods of obtaining data on earnings. The present study, for example, is based on personal interviews while the other study is based on mail questionnaires. Obviously, there are advantages and disadvantages in each of these methods. Second, the present study is essentially cross-sectional. It included graduates of five successive graduating classes, from 1960 to 1964. Weekly starting salaries were compared and found not to differ. Average monthly earnings, over the respondents' employment histories, were also compared and those of the vocational graduates were found to be higher. In the one city, for which some cost data were available, average monthly earnings were compared and the vocational graduates of the classes of 1960 and 1962 had higher earnings. These analyses suggest that vocational graduates initially earn the same as the other graduates but with more experience in the labor force tend to earn more.

The other study employs a type of analysis which is more longitudinal in nature. The sample contains two years of graduating classes, 1959 and 1960. The average monthly earnings of these graduates were compared for the first and sixth years of employment. In the first year the vocational graduates were found to have earned more. By the sixth year there was no significant difference. These data suggest an initial advantage for vocational graduates which disappears over time.

Third, there are some differences in the nature of the data that result from these methodologies. The cross-sectional analysis of the study has different respondents in each year. Hence, when the earnings of the 1960 and 1964 graduates are compared, the analysis involves different respondents under different labor market conditions as well as the effects of one and five years of labor market experience. This difficulty is not encountered when the experiences of the same respondents at two different points in time are compared. When the longitudinal analysis employs retrospective data, however, it enhances the opportunity for memory factors to influence the accuracy of the reporting of the data. That is, the respondents' reports of their earnings in the immediate past year are likely to be more accurate than their recall of their earnings six years ago.

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[7] Kaufman, J. J., Stromsdorfer, E. W., Hu T-w., and Lee, M. L. *An Analysis of the Comparative Costs and Benefits of Vocational versus Academic Education in Secondary Schools.* (Preliminary Report) The Institute for Research on Human Resources, The Pennsylvania State University, October, 1967.

The net result of this brief discussion is that, at this time, with the available data, it is impossible to determine the true experience of all the graduates from whom these two samples were drawn. Both studies do indicate that for some period of their employment experiences vocational graduates earn more than other graduates. The duration of this period and whether vocational graduates add to or lose their advantage with increased time in the labor market cannot be determined. Further exploration of this issue is obviously in order.

APPENDIX C

CODING OF OCCUPATIONS

SPECIFIC D.O.T. JOB TITLES

401	Bakers
421	Furriers
423	Milliners
425	Dressmakers and seamstresses
426	Tailors and tailoresses
432	Cabinetmakers
435	Upholsterers
444	Compositors and typesetters
445	Electrotypers and stereotypers
446	Lithographers
447	Photoengravers
448	Pressmen and plate printers, printing
460	Shoemakers and shoe repairmen, not in factory
469	Occupations in stoneworking, n.e.c.
471	Jewelers, watchmakers, goldsmiths, and silversmiths
473	Engravers
475	Machinists
476	Toolmakers and die sinkers and setters
480	Tinsmiths, coppersmiths, and sheet metal workers
481	Molders
483	Boilermakers
484	Structural- and ornamental-metal workers
485	Welders and flame cutters
486	Blacksmiths, forgemen, and hammermen
497	Electricians
508	Opticians and lens grinders and polishers
516	Painters, except construction and maintenance
523	Construction machinery operators, n.e.c.
524	Brick and stone masons and tile setters

525	Carpenters
526	Cement and concrete finishers
527	Painters, construction and maintenance
528	Paperhangers
529	Plasterers
530	Plumbers, gas fitters, and steam fitters
533	Asbestos and insulation workers
541	Locomotive engineers
553	Linemen and servicemen, telegraph, telephone, and power
555	Motion picture projectionists
558	Meatcutters, except in slaughtering and packing houses
573	Cranemen, derrickmen, hoistmen, and shovelmen
579	Mechanics and repairmen, railroad and carshop
580	Mechanics and repairmen, airplane
581	Mechanics and repairmen, motor vehicle
583	Mechanics and repairmen, n.e.c.
592-599	Foremen, all categories
605	Roofers and slaters
613	Fireman, other than process fireman
623-629	Apprentice, all categories